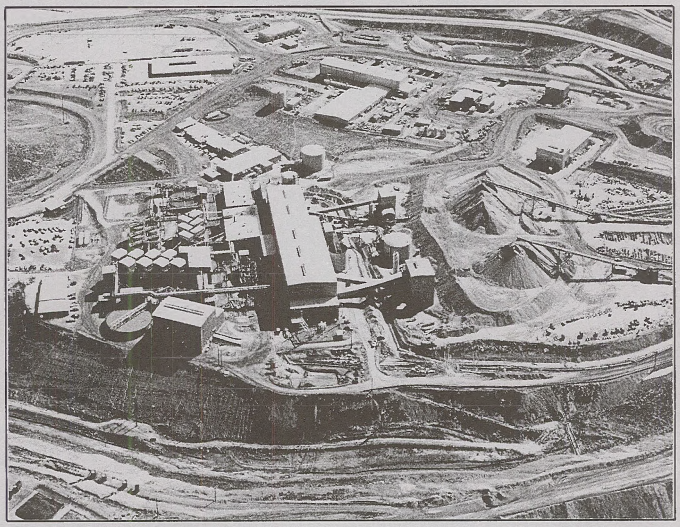
U.S. Department of the Interior
Bureau of Land Management
Elko District Office
Elko, Nevada

November 1993

FINAL

Environmental Impact Statement Newmont Gold Company's South Operations Area Project



Appendix A - Mitigation Plan

The Bureau of Land Management is responsible for the stewardship of our public lands. It is committed to manage, protect, and improve these lands in a manner to serve the needs of the American people for all times. Management is based on the principles of multiple use and sustained yield of our nation's resources within a framework of environmental responsibility and scientific technology. These resources include: recreation; rangelands; timber; minerals; watershed; fish and wildlife; wilderness; air, and scenic, scientific, and cultural values.

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NEWMONT GOLD COMPANY'S
SOUTH OPERATIONS AREA PROJECT
MITIGATION PLAN

Prepared for:

U.S. Department of the Interior
Bureau of Land Management
Elko District Office
Elko, Nevada

November 1993

TABLE OF CONTENTS

INTRODUCTION 1

I Riparian and Wetland Habitat 5
A. Summary of Potential Impacts 5
B. Riparian and Wetlands Mitigation Program 6

II Water Resources 19
A. Impacts on Groundwater Levels 20
B. Seep and Spring Mitigation 24
C. Streamflow Mitigation 30
D. Livestock Water Replacement 37
E. Stream Channel Stability 38
F. Stream Temperature 41
G. Other Water Quality Issues 41

III Aquatic Habitat and Fisheries 43
A. Summary of Potential Impacts 43
B. Mitigation of Impacts 43

IV Threatened Endangered and Candidate Species 45
A. Summary of Potential Impacts 45
B. Mitigation Measures 45

V Terrestrial Wildlife 48
A. Summary of Potential Impacts 48
B. Mitigation of Impacts 48

VI Soils, Vegetation and Visual Resources 59
A. Summary of Impacts 59
B. Summary of Existing Reclamation Plan 59
C. Enhanced Reclamation Techniques 59

VII Recreation 67
A. Summary of Potential Impacts 67
B. Mitigation 67

Appendix A Riparian Monitoring and Biological Standards 68
Appendix B Maggie Creek Streamflow Augmentation Plan 76
Appendix C Susie Creek Streamflow Augmentation Plan 85

LIST OF TABLES

No.	Description
Summary Table	Summary of Mitigation Plan
II - 1	Additional Groundwater Monitoring Wells
II - 2	Mitigation of Potentially Impacted Springs and Seeps
V - 1	Seed Mixture for Haul Road Brush Zones
V - 2	Seed Mixture for Haul Road Cut and Fill Slopes
V - 3	Seed Mixture for Mule Deer Transition Range
VI - 1	Seed Mixture for Deer Migration Route - North and East Exposure
VI - 2	Seed Mixture for Deer Migration Route South and West Exposure

LIST OF FIGURES

No.	Description
I - 1	Maggie Creek Watershed Restoration Project
I - 2	Sand Dune Springs Riparian Study Preserve
II - 1	Ground Water Monitoring Wells
II - 2	Surface Water Monitoring Sites
II - 3	Lower Maggie Creek Sedimentation
V - 1	Mule Deer Migration Corridor Typical Haul Road Cut/Fill Profile
V - 2	Mule Deer Migration Corridor Typical Haul Road Fill/Fill Profile
V - 3	Upper Haul Road Design and Seeding Plan

NEWMONT GOLD COMPANY
SOUTH OPERATIONS AREA PROJECT
MITIGATION PLAN

INTRODUCTION

In the Draft Environmental Impact Statement (DEIS) for Newmont Gold Company's South Operations Area Project, the Bureau of Land Management (BLM) provided detailed analysis of the potential impacts associated with implementation of Newmont's proposed Plan of Operations. The BLM also developed for public review and comment a general array of possible mitigation and monitoring measures for each potentially affected resource.

This Mitigation Plan provides the next step in the process set forth by the National Environmental Policy Act (NEPA) by defining a detailed, specific mitigation plan that Newmont commits to undertake upon issuance of a Record of Decision. The Plan is comprehensive, including mitigation measures for each significant potential resource impact identified in the DEIS. The Plan was developed for impacts without regard to whether they occur on public or private lands. These measures will address potential adverse impacts generally before they occur, and will provide not only protection of natural resources, but also improvement of most natural resources over pre-project baseline conditions.

Highlights of the mitigation for various critical resources include:

Riparian Areas and Wetlands:

The Maggie Creek Watershed Restoration Project will create a partnership among Newmont, the BLM, the TS Ranch and the Maggie Creek Ranch to restore and enhance more than 82 stream miles along Maggie, Jack, Little Jack, Coyote and Simon Creeks through riparian fencing, livestock grazing management, conservation easements, water augmentation and other measures. By these means, the Project will create a showcase demonstration of the compatibility of mining, ranching, recreation, environmental and natural resource values on multiple use lands. This Project and related mitigation measures will result in the preservation and improvement of approximately 1982.8 acres of riparian and wetland habitat--far in excess of the acres potentially impacted by the South Operations Area Project.

Newmont also will fund a program to support the on-going restoration efforts of the BLM and the Maggie Creek Ranch along Susie Creek. Newmont will continue to assist in the BLM's stream channel protection and flow enhancement work in the Marys River Basin by providing alternative water sources for livestock. Finally, Newmont will create three preserves for the

protection and study of the evolution of riparian and wetland habitats recently formed in the Sand Dune Springs area located on the TS Ranch.

Water Resources and Aquatic Habitat:

Potential impacts to water rights holders on the Humboldt River will be completely mitigated by the subordination of a portion of Newmont's senior irrigation rights equivalent to base flow reductions in the Humboldt. Through riparian improvements and the commitment to augment flow in certain seeps, springs, and streams impacted by dewatering, the mitigation plan will prevent adverse impacts to water quantity in the project area. Specific mitigation measures will also prevent impacts due to sedimentation or temperature. To enhance the BLM's capabilities in the field of groundwater resources, Newmont will provide funding to assist in establishing a full-time hydrologist position in the Elko District Office.

Threatened, Endangered and Candidate Species:

Enhancement of riparian and wetland habitat, and provision of additional flow to impacted seeps and streams, will prevent loss of occupied or potential habitat for listed and candidate species that utilize aquatic, wetland, and riparian habitats. Reclamation techniques will restore and/or increase habitat for raptors, including potential habitat in the Gold Quarry pit.

Terrestrial Wildlife:

The North Area Haul Road has been designed in cooperation with BLM specialists to prevent impacts to migrating mule deer through the use of cut and fill slopes no greater than 50 percent, gaps in the road safety berm, and the construction of staging areas throughout the key migration corridor crossed by the road. In addition, Newmont will implement restoration efforts in the mule deer transition range on the west flank of the Tuscarora Mountains, which will fully offset any temporary loss of forage from mining disturbance.

Soils, Vegetation, and Visual Resources:

Reclamation practices at the South Operations Area will include salvage of all practicably available topsoil, enhancement of post-mining habitat in open pits for raptors and other wildlife, use of varied reclamation techniques to create diversified post-mining ecosystems, and employment of a landscape architect to design a reclamation landscape that is harmonious with surrounding terrain.

The details of these mitigation measures, as well as additional elements included in the Plan, are described in the sections below, and are summarized in the attached Summary Table.

SUMMARY TABLE
SOUTH OPERATIONS AREA PROJECT
MITIGATION PLAN

Resource	*Potential Impacts of Proposed Action*	*Mitigation*
Riparian and Wetland Areas	A total of 1,419 acres of riparian and wetland areas along Maggie Creek, its tributaries, and the Humboldt River might be affected. An additional 14 acres of riparian habitat associated with springs and seeps might be affected.	• The Maggie Creek Watershed Restoration Project, a program to achieve restoration and enhancement of upland, riparian and wetland habitat in the Maggie Creek drainage basin through a pioneering cooperative effort among Newmont, the BLM, the TS Ranch, the Maggie Creek Ranch, and others. • The Susie Creek Riparian Enhancement Project. • The Marys River Riparian Project. • The Sand Dune Springs Riparian Study Preserve. • A Seep and Spring Enhancement and Flow Augmentation Program.
Springs and Seeps	Reduced or eliminated flow in 25 springs and seeps in the project area might occur.	• Provision of replacement flows at impacted seeps and springs.
Streams and Rivers	Increased baseflow in Maggie Creek and the Humboldt River during dewatering. Reduced baseflow in middle Maggie Creek, Susie Creek and the Humboldt River might occur after dewatering ceases. Increased sediment load in Maggie Creek and the Humboldt River. Increased water temperature in the Humboldt River.	• Establishment of a comprehensive groundwater monitoring network. • Contribution toward the cost of a BLM staff hydrologist. • Mitigation of potential base flow losses to area creeks, including Maggie, Susie, James, Soap, and other area creeks through riparian improvement projects and, if necessary to protect riparian and aquatic values, through stream flow augmentation to middle Maggie Creek and to Susie Creek. • Prevention of adverse impacts to Humboldt River water rights holders by subordination of a portion of Newmont's senior irrigation water rights equivalent to base flow reductions in the Humboldt due to dewatering. • Prevention of increased sediment loading to the Humboldt River through implementation of channel stabilization measures and creation of a polishing wetlands at the base of Maggie Creek. • Prevention of temperature increases by construction of up to two cooling towers.
Aquatic Habitat and Fisheries	Potential stress on aquatic life in the Humboldt River from Carlin to Palisade due to decreased streamflow in tributary streams during and after dewatering. Decreased fishery values in Humboldt River as a result of increased sediment loads and temperature.	• The Maggie Creek Watershed Restoration Project and the Susie Creek Riparian Enhancement Project will enhance aquatic habitat in those watersheds. • Recolonization of depleted sections of the Humboldt River using indigenous invertebrates. • Prevention of increased sediment loading to the Humboldt River through implementation of channel stabilization measures and creation of a polishing wetlands at the base of Maggie Creek. • Prevention of temperature increases by construction of up to two cooling towers.

SUMMARY TABLE
SOUTH OPERATIONS AREA PROJECT
MITIGATION PLAN

Resource	*Potential Impacts of Proposed Action*	*Mitigation*
Threatened, Endangered, and Candidate Species	The proposed action is not predicted to affect Lahontain cutthroat trout (LCT) or any of its critical habitat. Potential habitat of several candidate species that utilize aquatic or adjacent riparian habitat might be affected.	• The Maggie Creek Watershed Restoration Project and stream flow augmentation programs will mitigate potential impacts on LCT and candidate species. • Flows into ponds used by the Townsend's big-eared bat will be augmented if impacted by dewatering. • Reclamation of disturbed areas and enhancements of the final pit wall.
Livestock Grazing	A total of 8,092 AUMs would be temporarily displaced on public and private lands as a result of surface disturbance, dewatering of springs and seeps, and modifications to fence locations.	• Reclamation and recovery of the groundwater table will reestablish most grazing habitat. • Replacement of stockwater lost due to mine dewatering.
Terrestrial Wildlife	Loss of habitat associated with disturbance of 1,573 acres; impedance of mule deer migration.	• Reclamation of most disturbed areas to a self sustaining diverse ecosystem. • Implementation of the Maggie Creek Watershed Restoration Project, which will improve wildlife habitat within the upland, riparian and wetland areas adjacent to Maggie, Simon, Jack, Little Jack and Coyote Creeks by increasing the amount and diversity of woody and herbaceous forage available and providing dense cover for a wide variety of riparian and upland species. • Realignment and redesign of the North Area Haul Road to facilitate mule deer migration. • Dunphy Hills Winter Range/Tuscarora Transition Range Restoration.
Soils, Vegetation and Visual Resources	Soils disturbed on 1,573 acres.	• Redistribution of topsoil on 1,376 acres during reclamation. • Implementation of enhanced reclamation techniques resulting in self-sustaining, diverse ecological systems. • A test plot program designed to identify the optimum combination of topsoil depth, soil amendments and plant species. • Incorporation of landscape considerations resulting in stable landforms which are geomorphologically congruous with adjacent topography.
Recreation and Wilderness	Continued stress on existing recreational facilities in the Elko area.	• A conservation easement will allow hiking and fishing along middle Maggie Creek.

I. RIPARIAN AND WETLAND HABITAT

A. SUMMARY OF POTENTIAL IMPACTS

The draft Environmental Impact Statement (DEIS) for the South Operations Area Project states that the proposed dewatering of the Gold Quarry pit and discharge of excess water into Maggie Creek might change the duration, extent, or depth of soil saturation in riparian or wetland areas. This could result in modifications of a maximum of 1,419.2 acres of riparian vegetation associated with creeks and rivers in the project area, as follows:

• Maggie Creek	1,037.9 acres
• Susie Creek	262.9 acres
• James Creek	15.3 acres
• Soap Creek	1.7 acres
• Marys Creek	4.1 acres
• Lynn/Simon Creeks	20.1 acres
• East Cottonwood Creek	0.1 acres
• Humboldt River	77.1 acres
TOTAL:	1,419.2 acres

The riparian areas and wetlands along stream reaches within and adjacent to the South Operations Area are described and mapped in the riparian survey report on file with the Bureau of Land Management (BLM), Elko District, Elko, Nevada. These potential impacts are discussed on pages 4-67 through 4-74 and depicted in Figures 4-12 and 4-13 of the DEIS.

Newmont plans to ensure that all significant impacts described in the DEIS, regardless of public or private ownership status, will be mitigated through both on-site and off-site activities. Newmont will therefore undertake a major program of riparian and wetlands habitat improvements and overall watershed restoration in and adjacent to the project area. This program will enhance 1982.8 acres of riparian habitat, over 40,000 acres of upland watershed, and 82 miles of stream channel.

B. RIPARIAN AND WETLANDS MITIGATION PROGRAM

Newmont's mitigation program for riparian habitat impacts will encompass the following five elements:

1. **The Maggie Creek Watershed Restoration Project,** a program to achieve restoration and enhancement of riparian habitat in the Maggie Creek drainage basin through a pioneering cooperative effort among Newmont, the BLM, the TS Ranch, the Maggie Creek Ranch, and others;

2. **The Susie Creek Riparian Enhancement Project,** a program to be funded by Newmont to support the on-going restoration efforts of the BLM and Maggie Creek Ranch along Susie Creek;

3. **The Marys River Riparian Project,** in which Newmont assists in BLM's stream channel protection and flow enhancement work in the Marys River Basin by providing alternative water sources for livestock;

4. **The Sand Dune Springs Riparian Study Preserve,** in which Newmont will create three zones for protection and study of the evolution of riparian and wetland habitats recently formed in the Sand Dune Springs area; and

5. **A Seep and Spring Enhancement and Flow Augmentation Program,** which will assure that existing baseline riparian areas associated with seeps and springs within the project area will not be lost due to dewatering impacts.

These riparian habitat mitigation measures will extend throughout the life of the de-watering impacts identified in the DEIS. The mitigation measures described in this section will also contribute to mitigation of potential impacts on a number of other resources, including water resources (stream flows), threatened and endangered species (including candidate species), and terrestrial wildlife. The benefits to those resources are discussed in later sections of this plan.

1. The Maggie Creek Watershed Restoration Project

The majority (77 percent) of the potentially affected riparian acreage identified in the DEIS occurs along Maggie Creek on privately owned lands. Maggie Creek is located in a highly visible area along State Highway 766. Therefore, this Mitigation Plan provides Newmont, the BLM, the TS Ranch, and the Maggie Creek Ranch with an ideal opportunity to develop a "show case" watershed restoration project that will enhance riparian and wetland habitat, depicting the compatibility of mining, livestock grazing, recreation, wildlife and environment values.

The Maggie Creek Watershed Restoration Project has been developed through a cooperative effort, creating a partnership among Newmont, the BLM, the TS Ranch and the Maggie Creek Ranch for responsible and innovative land stewardship. The Project will encompass five basic elements: (1) water development and fencing to enhance riparian areas; (2) an innovative grazing management program; (3) appropriate, BLM-approved utilization of in-stream enhancement structures; (4) a program of woody planting on stream banks; and (5) creation of conservation easements covering stream-side areas that will allow research and low-impact recreational activities in these privately-owned areas. Each of these elements is described below.

Water Development and Fencing to Enhance Riparian Areas

Protected riparian zones will be created along more than 82 stream miles in the Maggie Creek basin. These zones will be created through the use of existing and new fences that will be constructed and maintained by Newmont. The riparian pastures and parcels created (as well as the land ownership of each pasture and parcel) are shown on Figure I-1 (with overlay).

In middle Maggie Creek, approximately five miles of new fencing will be added to existing fences to protect approximately 30 stream miles of riparian and wetland habitat along the middle section of Maggie Creek (and along lower Coyote, Jack and Little Jack Creeks) on privately owned property controlled by the TS Ranch. In addition, existing water gaps would be fenced along the creek, and replacement of water would be provided by constructing groundwater interception pits or solar-powered wells. Some of this work will require the permission of the Maggie Creek Ranch, which has expressed the intent to manage grazing in this area so as to improve the riparian habitat conditions.

Along upper Maggie Creek, Newmont will, with the permission of and in cooperation with the Maggie Creek Ranch, fund and construct approximately 5 miles of new fencing in the area from Coyote Creek to Red House. This fencing, in conjunction with existing fences, will protect more than 11 stream miles.

Below the Narrows, Newmont will build approximately 4.5 miles of fence on land currently controlled by the Maggie Creek Ranch, which has agreed in principle to manage the new pasture created by this fence so as to achieve and maintain the riparian habitat standards described in Appendix A. The 3 existing pastures to the south of this new pasture will be grazed by the Maggie Creek Ranch during the spring and fall in a controlled manner, in consultation with BLM. Cattle will be excluded from the stream

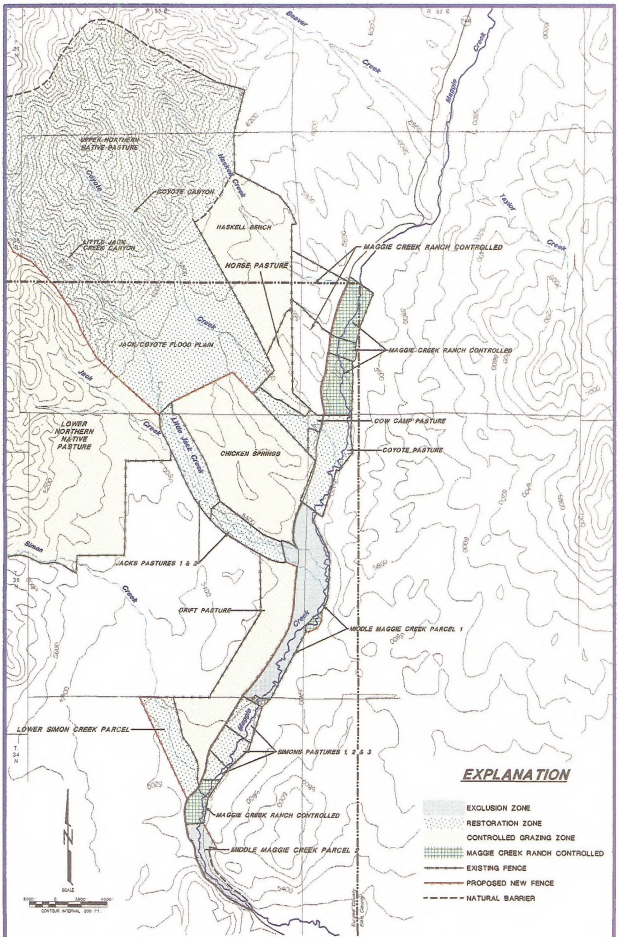

FIGURE I-1

MAGGIE CREEK WATERSHED RESTORATION PROJECT

NEWRSTRA.DWG

channel stabilization enhancement areas, to the extent necessary to protect the channel improvements.

New fencing will be built to create protected riparian restoration zones in the upper Little Jack Creek and Coyote Creek watersheds within the Northern Native Pasture, including the Jack/Coyote Flood Plain. In addition, existing fencing will be used to protect riparian restoration zones along the balance of Coyote Creek, Little Jack Creek, and lower Jack Creek. Finally, new fencing will be built to create a protected riparian restoration zone along the perennial reach of lower Simon Creek.

All new fences will be built within one year of the issuance of the Record of Decision.

Vegetation Management Plan

Newmont and the TS Ranch, in conjunction with the BLM, will implement a Vegetation Management Plan for the middle Maggie Creek, Simon Creek, Jack Creek, Little Jack Creek and Coyote Creek upland, riparian and wetland zones. Under this Plan, advanced grazing management techniques will be applied to the entire Northern Native Pasture. This holistic approach to land stewardship will cover the management of over 40,000 acres of upland, riparian and wetland areas predominantly used for livestock grazing.

The primary focus of the Vegetation Management Plan will be to:

- Aid in the reestablishment of upland, riparian and wetland plant species to a predefined biological level.

- Restore streamside riparian vegetation and stream banks damaged by livestock and preclude further impacts.

Under the Plan, the Northern Native Pasture and areas along middle Maggie Creek will be separated into three types of grazing zones, as shown on Figure I-1. Each grazing zone is defined to permit and/or limit specific types of uses, as follows:

Riparian Exclusion Zones - Livestock will be permanently excluded from these zones. These zones include:

- Middle Maggie Creek Parcels #1 & 2

Riparian Restoration Zones - Livestock will be excluded from these zones until the biological standards for riparian conditions established for these zones (as described below) have been achieved. In addition, no grazing will take place anywhere along Maggie Creek at any time streamflows into the creek are being augmented under the Maggie Creek Streamflow Augmentation Plan (as described in Section II below). These zones include:

- Upper Northern Native Pasture
- Jacks Pastures #1 & 2
- Jack/Coyote Flood Plain
- Simons Pastures #1, 2 & 3
- Lower Simon Creek Parcel
- Coyote Pasture
- Cow Camp Pasture

Following achievement of the biological standards for riparian condition applicable to each pasture, that pasture will be managed so as to maintain the standards. Riparian monitoring procedures and biological standards to be met and maintained in each of the managed grazing areas are detailed in Appendix A. To ensure maintenance of the standards, a grazing system will be developed (in accordance with BLM's management authority over the TS Allotment) that will include a requirement that the Upper Northern Native Pasture will be rested at least every other year.

If the wetland vegetation on the Jack/Coyote Flood Plain does not improve in the absence of grazing after three years, the TS Ranch will have the option to convert it to a Controlled Grazing Zone, by constructing fence adequate to protect the Upper Northern Native Pasture.

Controlled Grazing Zone - These areas will be rested every third year, and utilization will not exceed 50 percent of current year's growth during those years the pastures are grazed. The Controlled Grazing Zones will include:

- Lower Northern Native Pasture
- Chicken Springs Pasture
- Haskell Bench
- Horse Pasture
- Drift Pasture

For the Lower Northern Native Pasture, a grazing system will be developed to improve and maintain good stream and riparian habitat conditions (in accordance with BLM's management authority over the TS Allotment) that will include a requirement that grazing be completed no later than June 30 of each grazing season in years that it is grazed. The health of the riparian vegetation within this area will be monitored in conjunction with the BLM. Provision will be made to trail cattle from the Lower Northern Native Pasture to the Chicken Springs Pasture, Haskell Bench and the Horse Pasture, and from those pastures to the Drift Pasture.

This Vegetation Management System will require active implementation efforts by the TS Ranch. Further, the TS Ranch will not increase its use of other portions of the public lands within the TS Allotment to compensate for the AUMs proposed to be reduced to successfully implement this Vegetation Management Plan; this would entail taking voluntary non-use of these AUMs during the life of the project.

These different management zones will provide valuable insights into the comparative benefits of differing grazing practices. The information developed through this program can therefore be used in planning future watershed riparian restoration projects in multiple use lands under BLM stewardship.

In-Stream Structure Test Project

As a second distinct element of the Maggie Creek Watershed Restoration Project, Newmont will conduct a comparative study of stream restoration success with and without the use of in-stream habitat enhancement structures. To do this, Newmont will install a small number of rock structures and/or in-stream boulders in one of two main reaches of middle Maggie Creek within the Riparian Exclusion Zones. The locations for these structures will be determined on a site-specific basis, in consultation with BLM, to improve the stream channel riffle-and-pool morphology.

To determine the appropriate locations, types and numbers of structures, Newmont will commission a consulting wildlife biologist to design the structures in the field. A BLM resource specialist will be invited to participate in the field design work, and no structures will be constructed without BLM concurrence.

An alternate reach of middle Maggie Creek within one of the Riparian Exclusion Zones will be identified and monitored as a control. These comparative reaches will provide valuable information for future stream restoration efforts in the region.

Woody Planting

Willows have already begun to colonize riparian areas along Maggie Creek where grazing pressure has been reduced or eliminated. Under the Vegetation Management Plan, it is anticipated that vigorous woody vegetation will naturally and rapidly develop.

However, species of large trees are conspicuously absent from the middle Maggie Creek. Where suitable sites (selected in consultation with BLM) can be located, approximately 100 saplings of a suitable *Populus* species will be planted along middle Maggie Creek. These trees are well-suited to habitat such as middle Maggie Creek and would be expected to provide a seed source for more widespread establishment in the region.

Conservation Easement

In addition to the watershed and riparian restoration measures set forth above, Newmont in cooperation with the TS Ranch will create a conservation easement in favor of the BLM addressing management of the riparian exclusion and restoration zones on middle Maggie Creek as described above, extending throughout the life of the dewatering impacts described in the DEIS. After the zones have had an adequate period to recover (as determined by BLM), the easement will grant public access to these private land areas for purposes of research, limited public interpretive areas, and low-impact recreational activities, such as hiking and fishing. Hunting will be allowed on a TS Ranch-issued permit basis.

Public use of the easement area will be limited to daylight hours. No motor vehicles, bicycles or campfires will be permitted; horses, dogs, hunting and firearms (except as approved by the TS Ranch through use permits) also will be prohibited. Two corridors from State Highway 766 will be defined for access to the areas.

The BLM and other governmental resource agencies will be granted access commencing in 1994 for research purposes.

Anticipated Mitigation Results

Long-term exclusion of livestock from the immediate creek environs will permit dense woody and herbaceous riparian vegetation to develop along the creek banks, with the following specific benefits:

- Reduced active channel width and increased depth
- Reduced in-stream sedimentation; increased fines in overbank areas
- Stabilized banks
- Elevated water tables in the floodplain
- Decreased water temperature

The hydrologic benefits to be realized from riparian habitat enhancement along middle Maggie Creek and in the Jack and Coyote Creek watersheds are expected to offset the ecological effects of the modeled 2-4 cfs baseflow reduction from groundwater pumping which is projected to occur below the Simon Creek confluence with Maggie Creek. This will mitigate potential impacts upon riparian habitat that are identified in the DEIS.

Enhancement of riparian habitat that will result from this mitigation project will affect the 1,038 acres of potential impact along Maggie Creek identified in the DEIS, plus large areas of habitat outside the cone of depression, as itemized below. This results in 1,982.8 acres of riparian and wetland habitat enhancement in the Maggie Creek basin as follows (not including bank stabilization areas on lower Maggie Creek):

• **Maggie Creek within the 10-foot contour**	**1,005.9 acres**
• **Maggie Creek outside the 10-foot contour**	**595.0**
• **Jack and Little Jack Creek**	**214.0**
• **Coyote and Spring Creeks**	**132.8**
• **Simon and Lynn Creeks**	**35.1**
Total	**1,982.8 acres**

The 1,982.8 acres of habitat protection and enhancement that are provided herein constitute mitigation for the 1,038 acres potentially impacted along Maggie Creek, as well as for small acreage of potentially affected habitat along other creeks within the impact zone (James, Soap, Lynn, Simon, and East Cottonwood Creeks). Additional riparian areas outside the ten-foot drawdown area also will be enhanced under the Mitigation Plan. (Potential impacts and enhancement acreage on Susie Creek are discussed below.)

Moreover, the habitat values of the enhanced areas will be superior to pre-project conditions, and significant portions of the non-wetland riparian habitat types within the enhancement area will be converted to wetland habitat types. Thus, in addition to providing quantitative mitigation by enhancing many more acres of habitat than could potentially be affected by dewatering, the proposed riparian mitigation program provides very significant qualitative habitat improvement.

In addition, conversion of some non-wetland riparian to wetland riparian will contribute to mitigation of any losses of wetland acreage subject to federal jurisdiction under Section 404 of the Clean Water Act.

2. Susie Creek Riparian Enhancement Project

Recently initiated exclusion of livestock by the Maggie Creek Ranch along lower Susie Creek, in conjunction with the BLM, has resulted in improvement of the riparian habitat in that area. In order to offset any potential adverse impacts from dewatering upon this recovering habitat, Newmont, in cooperation with the Maggie Creek Ranch and the BLM, will install fencing along any portions of the creek within the predicted impact area that have not already been protected, and along a linear distance of the creek outside the impact area equivalent to the presently fenced distance within the impact area. Newmont will install up to 8 miles of fence along Susie Creek. Any fencing conducted will be in full cooperation with and by approval of the Maggie Creek Ranch and, contingent on land ownership, the BLM. All new fences will be constructed within one year of such approval.

These mitigations will compensate for potential impacts upon the 262.9 acres of possibly affected riparian areas on lower Susie Creek.

3. Marys River Riparian Project

To support BLM's riparian restoration efforts on Marys River, Newmont has drilled three stock watering wells, two of which encountered productive zones capable of producing more than five gallons per minute. A fourth well will be provided by Newmont, also to produce approximately five gallons per minute.

These stock wells are located on the west side of Marys River and are designed to keep cattle off the banks of the creek, thereby enhancing bank storage capacity and vegetative cover. This also will increase the base flow gain into the Humboldt River.

This system of wells allows use of 3,200 AUMs on the irrigated meadows of the South Cross Field adjoining Marys River without utilizing the river's riparian zone. The wells directly benefit the riparian system by eliminating the need for 6 water gaps on the Marys River. Each gap would have been approximately 5 acres.

The indirect benefit of the wells that supply the water system is the exclusion of grazing along the Marys River channel for approximately 5 miles, allowing improvement of about 1,400 acres of riparian habitat. In addition, use of these irrigated meadows on the South Cross Field are in lieu of the 12,000 acre Riparian Pasture on the upper watershed of the Marys River. The Riparian Pasture includes 18 miles of the Marys River and two of its tributaries, Chimney Creek and Cutt Creek.

4. Sand Dune Springs Riparian Study Preserve

Newmont will create three zones for the protection and study of the evolution of riparian and wetland habitat recently formed in the Sand Dune Springs area. In 1989, the first of what are now three spring areas appeared in the Boulder Basin, apparently as a result of water recharge from the TS Ranch Reservoir. Water is sent to the reservoir from dewatering operations being conducted by other mining operations not related to the South Operations Area Project.

These springs have created a complex of high quality riparian and wetland areas on TS Ranch property. Features of these spring areas include long winding marshes of cattails and bulrush developing along streams and small ponds of relatively warm water. The largest saturated area (approximately 930 acres) extends into the sand dunes to the west and therefore have been identified as the Sand Dune Springs. The other areas are referred to as Green Springs (124 acres) and Knob Springs (206 acres). The location of these three zones of springs is shown on Figure I-2. These springs are expected to remain as long as dewatering activities are being conducted in the Little Boulder Basin, and probably for many years thereafter.

A field review of the Sand Dune Springs area was recently conducted by personnel from Newmont, the BLM, the Nevada Division of Wildlife (NDOW), and the U.S. Fish & Wildlife Service. As a result of this field examination, there was general concurrence that the areas exhibited significant high quality riparian and wetland habitat values.

In July 1993, Newmont approved the construction of a diversion canal that would carry water from the springs to an area known as the South Boulder Farm Irrigation Project (see Figure I-2). The purpose of this diversion channel is to decrease flows in

order to lower the water levels in the marsh, allowing for increased plant growth and development of a broad diverse ecotone between the marshes and the uplands. Thediversion will also control excess flows from the spring areas and prevent the flows from creating undue erosion and sedimentation.

During the summer months (April to September), a portion of the water from the springs will be channeled and diverted for irrigation purposes. The soil saturation necessary to maintain hydrophytic vegetation will not be eliminated by this diversion. Diversion of water will be suspended in September, so that the marshes and surrounding ecotones will be thoroughly saturated during fall and winter.

The wetlands being created at the Sand Dune, Knob, and Green Springs areas will provide a resting place and bountiful food source for migrating waterfowl and shorebirds. These species typically transit the area by the tens of thousands during peak migration periods in the spring and fall. These three riparian and wetland areas will support more migrating birds than is possible with a static marsh water level. The marshes will be maintained by reduced flows in the summer months sufficient to support resident species of birds, mammals, amphibians and macroinvertebrates.

During the summer of 1994, Newmont will fence the three spring sites in order to restrict livestock intrusion and create three exclusive Riparian Study Preserves. The location of the fencing is shown on Figure I-2. Access to the three Riparian Study Preserves will be provided on request to BLM representatives and to officials of other resource management agencies for the purpose of research and study in this riparian and wetland area.

5. Seep and Spring Enhancement and Flow Augmentation.

Monitoring and mitigation for potential dewatering impacts upon seeps and springs is described in detail in Section II(B), Water Resources, Seeps and Springs Mitigation. This component of the mitigation package consists of the following principal elements:

- the flow of springs that support important acreage of baseline wetland habitat will be supplemented through wells to maintain that habitat and provide water for wildlife and livestock;

- guzzlers will be provided near springs that support wetland habitat of insignificant acreage or low quality, but which are important as point sources of drinking water for wildlife;

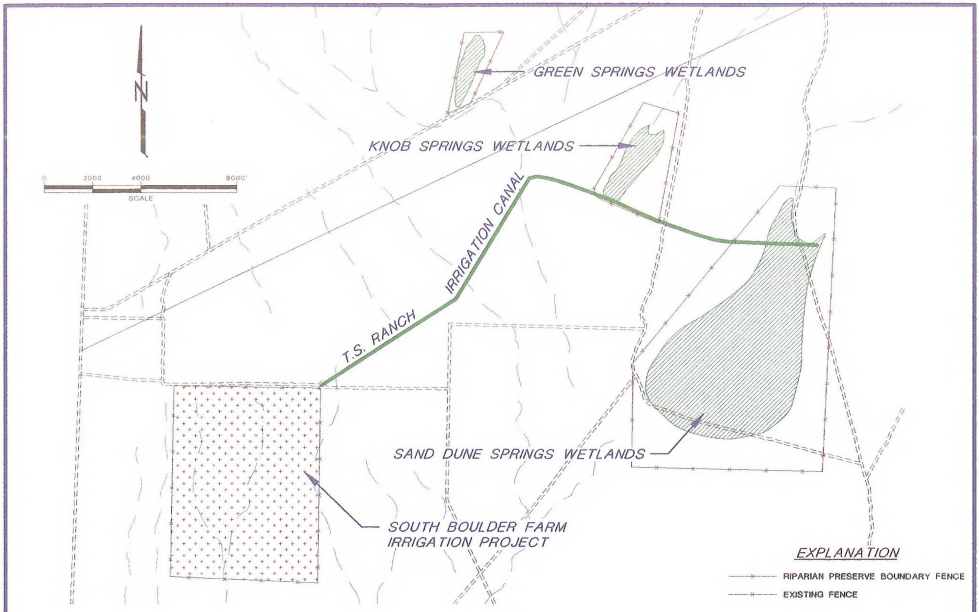

FIGURE I-2
SAND DUNE SPRINGS RIPARIAN STUDY PRESERVE

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- in order to exclude livestock while maintaining stockwater facilities, each of the 25 seep and spring sites within the predicted 10-foot drawdown contour will be fenced and/or developed, subsequent to discussions with the BLM on design parameters. These actions will be completed within one year of the issuance of the Record of Decision. Newmont will maintain or replace fences and/or developments as necessary.

- if additional seeps and springs are found within the modeled impact zone subsequent to the issuance of the Record of Decision, such areas would be treated in a similar manner as described above.

These mitigation measures will prevent any significant impact to the 14 acres of riparian and wetland vegetation associated with the seeps and springs in the project area. Cooperation with private landowners and BLM lessees may be required for certain seeps and springs.

II. WATER RESOURCES

Potential impacts to water resources identified in the Draft Environmental Impact Statement include impacts to groundwater levels, seeps and springs, surface water quantity, sediment loading, and temperature. Mitigation measures that will be implemented under the Plan covering each of these categories are detailed below.

The Mitigation Plan will ensure that no adverse effects to water resources occur as a result of the South Operations Area dewatering. The basic elements of mitigation for water resources include:

- **Establishment of a comprehensive groundwater monitoring network** to track the development of the dewatering cone of depression, with intensified monitoring frequency when and if the cone approaches surface water resources;

- **Provision of replacement flows at impacted seeps and springs** through the use of groundwater wells and through guzzlers;

- **Mitigation of potential base flow losses to area creeks**, including Maggie, Susie, James, Soap, and other area creeks through riparian improvement projects and, if necessary to protect riparian and aquatic values, through stream flow augmentation to middle Maggie Creek and Susie Creek;

- **Prevention of adverse impacts to Humboldt River water rights holders** by subordination of a portion of Newmont's senior irrigation water rights equivalent to base flow reductions in the Humboldt due to dewatering;

- **Prevention of increased sediment loading** to the Humboldt River through implementation of channel stabilization measures and creation of a polishing wetlands at the base of Maggie Creek;

- **Avoidance of impacts due to water temperature changes in the Humboldt** by construction of up to two cooling towers to treat dewatering flows prior to discharge; and

- **Contribution by Newmont toward the cost of a BLM staff hydrologist** for the Elko District Office to enhance the District's overall capability to monitor Gold Quarry and other area dewatering projects.

The details of each element of this mitigation package for water resources are provided in the following sections.

A. IMPACTS ON GROUNDWATER LEVELS

1. Summary of Impacts

Initially, the cone of depression will be relatively small; the cone will expand laterally as dewatering occurs over the life of the project. Impacts to seeps, springs and stream flows may occur when the cone of depression expands sufficiently to lower the water table in the immediate area of a particular surface water resource. An extensive monitoring system will be utilized to track the development of the cone of depression so that mitigation measures can be implemented in advance of significant flow reductions.

2. Groundwater Monitoring Network

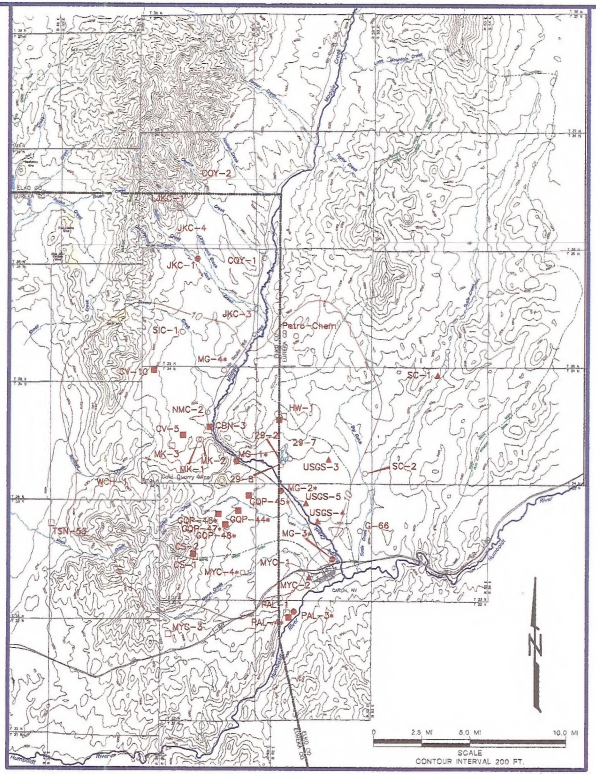
A network of groundwater monitoring wells extending outward from the Gold Quarry pit has been in use under the Maggie Creek Basin Monitoring Plan for several years. This network, shown in the Draft Environmental Impact Statement at Table 3-20, is being supplemented by the addition of twenty-seven new groundwater monitoring wells. These new wells are listed in Table II-1. With these new wells, the monitoring network will incorporate more than 80 monitoring wells. The locations of all regional groundwater monitoring wells (that is, wells located outside the Gold Quarry pit boundaries) are shown on Figure II-1.

This expanded network of monitoring wells provides the capability to monitor changes in the groundwater table throughout the extent of the dewatering cone of depression. Because wells are completed in the various geologic strata and at a range of depths, the network will allow creation of a three-dimensional picture of the size and shape of the drawdown cone.

In addition, monitoring wells are strategically placed in sensitive areas where drawdown could affect recharge to streams and springs. These wells will provide advance notice of potential impacts to surface flows, enabling the implementation of appropriate mitigation measures generally in advance of the effect.

TABLE II - 1		
Monitoring Well Location	**Formation/Unit**	**Well ID**
Pit Area	Siltstone	GQP-39
Pit Area	Siltstone	GQP-43
Pit Area	Limestone	GQP-37
Pit Area	Limestone	GQP-38
Pit Area	Limestone	GQP-40
Pit Area	Limestone	GQP-41
Pit Area	Limestone	GQP-42
Regional	Siltstone	MK-3
Regional	Carbonate	PAL-4*
Regional	Carbonate	GQP-44*
Regional	Carbonate	GQP-45*
Regional	Carbonate	GQP-46*
Regional	Carbonate	GQP-47*
Regional	Carlin Formation	MK-1
Regional	Carlin Formation	MK-2
Regional	Carlin Formation	COY-1
Regional	Carlin Formation	COY-2
Regional	Carlin Formation	JKC-3
Regional	Carlin Formation	JKC-4
Regional	Carlin Formation	MYC-4*
Regional	Carlin Formation	GQP-48*
Regional	Carlin Formation	MG-4*
Regional	Tertiary Volcanics	SC-1
Regional	Alluvium	MG-1*
Regional	Alluvium	MG-2*
Regional	Alluvium	MG-3*
Regional	Alluvium	PAL-3*

* To be constructed



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EXPLANATION

MAXIMUM EXTENT OF 10Ft DRAWDOWN CONTOUR PROPOSED ACTION (Year 2005)

* WELL TO BE DRILLED (3rd OR 4th QUARTER) 1993

NOTE: THIS FIGURE DOES NOT INCLUDE THE 25 CONCENTRATED WELLS IN THE IMMEDIATE VICINITY OF THE PIT.

- ALLUVIUM
- VOLCANICS (TERTIARY)
- CARLIN FM. (TERTIARY)
- SILTSTONE
- LIMESTONE

FIGURE II-1
GROUND WATER MONITORING WELLS

3. Groundwater Monitoring and Reporting

Pre-project baseline monitoring at existing wells has documented groundwater levels for the period 1990 to date. Groundwater level measurements will be conducted at each monitoring well on a monthly basis. The monthly measurements will be compared to previous data to determine the occurrence of change and, if applicable, the rate of change in groundwater levels at each well.

In order to closely track changes in groundwater levels that may result in direct impacts to surface water flows, the frequency of monitoring at regional basin fill wells (those completed in the Carlin, alluvial, and volcanic formations) will be increased when significant change first appears. If the groundwater level at any regional basin fill monitoring well declines more than three feet during any one-month period, sampling frequency will be increased to once per week.

This monitoring regime will provide accurate and timely information concerning the extent and rate of expansion of the cone of depression. As discussed below, this information will be used to trigger implementation of mitigation measures for individual springs, seeps, and streams if and when the cone of depression impacts groundwater recharge to those water resources.

Newmont will provide the BLM with monthly hydrographs from monitored wells as well as quarterly reports setting forth the results of the groundwater monitoring. In addition, the data will provide timely input to the MINE-DW hydrogeologic model on a annual basis, to continually refine the model's predictive capacity. The recalibrated model then will be used to generate diagrams of the current and predicted cone of depression. This information will provided to the BLM in the form of an annual MINE-DW hydrogeologic modelling report, and will be used to adjust the monitoring program or add additional wells, as necessary, to be determined in consultation with the BLM.

4. Funding for Elko District Staff Hydrologist

To enhance the capabilities of the BLM's Elko District Office to monitor and evaluate potential impacts from mine dewatering, Newmont will contribute $30,000 per annum towards the cost of establishing and maintaining a staff hydrologist position at the Elko District for the next 15 years. This position will not only enable on-going evaluation of Gold Quarry dewatering activities, but will also provide the District with a resource specialist to review the cumulative impacts from mine dewatering projects along the Carlin Trend.

B. SEEP AND SPRING MITIGATION

1. Summary of Potential Impacts

Most springs in the mountains are perched and therefore are not likely to be affected by mine dewatering. Up to 25 spring and seep sites are within the 10-foot drawdown contour and could be adversely impacted through reduced or lost flows. Twenty-one of these spring and seep sites are located adjacent to the mountain spring domain boundaries and therefore could be part of the perched spring systems unaffected by dewatering. Four of these sites located within the 10-foot drawdown contour line are not adjacent to the mountain spring domains. In addition, the Carlin "Cold" Spring system used by the town of Carlin as a water supply source is predicted to have a significant reduction in base flow.

Maximum impacts on springs, seeps, and groundwater levels would occur roughly between years 1998 and 2005, followed by groundwater recovery to within 10 feet of pre-mining levels by year 2042.

2. Monitoring of Potential Impacts

For monitoring and mitigation purposes, the 25 seep and spring sites located within the 10-foot drawdown contour line have been subdivided into three groups.

Group 1 encompasses seeps and springs located in the upper Maggie Creek basin along tributaries to Simon Creek and Maggie Creek. A total of eight discrete seeps and springs are included within this group. Four of these are within or adjacent to the Tuscarora Mountain spring domain; four others are not adjacent to the domain and appear to be supported by the groundwater table.

Group 2 consists of two spring areas west of the Gold Quarry pit that discharge to Soap Creek and to an unnamed drainage north of Soap Creek. The total flow rate from these two springs is approximately 20 gpm. These springs are located at the margin of the Mary's Mountain spring domain.

Group 3 consists of approximately 15 seeps and springs located on the east flank of Mary's Mountain. The majority of flow from these springs discharges to James Creek. This group of springs lies along the trace of the Tuscarora fault zone. Hydrogeologic evidence and groundwater monitoring to date indicate that the Tuscarora

fault functions as a hydraulic barrier between the water table beneath the Gold Quarry pit and the structurally compartmentalized aquifers that discharge water at these spring locations.

Three representative springs from each group would be monitored on a quarterly basis in order to provide baseline data. The remaining 16 seeps and spring sites within the predicted 10-foot drawdown contour will be monitored semi-annually, during high flow and low flow periods. Flow rates, Ph, temperature, specific conductance, and dissolved oxygen will be measured. This information will be correlated with precipitation and surface flow data for the area to attempt to establish the contribution, if any, of seasonal recharge to each individual seep and spring.

Simultaneously, the groundwater monitoring network (described in Part II(A) above) will be utilized to track the proximity of the cone of depression to each seep and spring group. Since many of the seeps and springs are located in or adjacent to mountain spring domains, the groundwater levels near these resources decline and recover on a seasonal basis in response to precipitation, snowmelt and runoff.

If the groundwater level in a monitoring well specified below falls more than 10 feet below the lowest elevation measured in the baseline year 1993, Newmont will initiate within 14 days consultation with the BLM concerning possible augmentation of the potentially impacted spring group. In addition, Newmont will increase its monitoring of the springs within that spring group to once per month. If any spring within a group subject to increased monitoring ceases to flow or to retain saturated ground, mitigation of flows (as specified below) will commence within 60 days, unless BLM directs otherwise or unless Newmont can demonstrate to BLM's satisfaction that the cessation of flows at that spring is not attributable to pit dewatering within the 60 day period. In addition, augmentation may be required if a substantial reduction in flow occurs at any spring within a group subject to increased monitoring, and the BLM determines that (i) such reduction is not due to natural flow variations as reflected in the monitoring data, and (ii) the benefits of augmentation outweigh the associated disturbance.

Spring flow mitigation will continue at the impacted spring until the applicable trigger well returns to within 10 feet of its pre-impact level (as determined by Newmont and BLM based on then-existing monitoring data), or until the BLM determines that mitigation is no longer necessary, whichever is sooner.

The wells that will be utilized to trigger intensified monitoring for each seep and spring group are as follows:

Spring Group	Wells Nos.
Group 1	NMC-2
Group 2	MK-3
Group 3: North Half	J-1, J-2
Group 3: South Half	CS-1, CS-2

Newmont is currently undertaking a regional springs and seep monitoring program involving approximately 50 locations. This information will be compared with local spring and seep data in the area potentially influenced by dewatering activities.

3. Seep and Spring Mitigation

Mitigation of lost flows at seeps and springs (as required above) will be accomplished by two basic mechanisms: replacement of flow or provision of substitute water sources at nearby locations. Where impacted seeps or springs support sizable riparian areas or provide flow to adjacent creeks, replacement of flow will be implemented through the use of groundwater wells drilled at or near the affected spring. Flow replacement will be done such that the primary function of unimpacted spring and seep flow is maintained. Where impacted seeps and springs do not serve those functions, but are important sources of water for terrestrial wildlife, substitute water sources will be provided through the use of guzzlers. In areas where seeps and springs are in close proximity to one another, a single well or guzzler may be utilized to mitigate several impacted water sources.

Mitigation measures will be implemented within sixty days after BLM and Newmont have determined that mitigation is necessary. Cooperation with private landowners and BLM lessees may be required for certain seeps and springs. Where guzzlers are utilized, Newmont will maintain or replace the guzzlers as required.

The specific mitigation measures that would be utilized at each of the 25 potentially impacted seeps and springs are set forth in Table II-2, and described below. Newmont will use its existing groundwater rights, or obtain additional well permits, to implement these mitigation measures. Newmont will transfer 50 percent of any water rights used to mitigate seeps and springs located on public land to the BLM

TABLE II - 2
Mitigation of Potentially Impacted Springs and Seeps

Group	Location[1] TN/RE-Section - 1/4,1/4	Newmont Inventory No.[2]	Description[3]	Mitigation
Springs Within 10 ft. Drawdown Contour and Not Adjacent to Spring Domains				
1	35/51-18-SE,SE		Simon Creek tributary; < 1 gpm	Guzzler
1	35/51-30-SE,SE	Spring 2	Pond at base of spring; 1 gpm on BLM spring list	4-inch well
1	35/51-32-NW,NW	Spring 3	Group of 2 springs and pond; < 1 gpm	4-inch well
1	34/51-10-NW,SE		Series of Springs feeding wet meadow; 20-30 gpm	4-inch well
Springs Adjacent to Spring Domain Boundaries				
1	35/51-18-SE,NW		Simon Creek tributary; < 1 gpm	Guzzler
1	35/51-30-NE,SE		On BLM spring list	Guzzler
1	34/51-6-NW,SW		Group of springs on hillside; < 1 gpm	4-inch well (co-located)
1	34/51-6-SW,NW		Spring leading to meadow; 1 gpm	4-inch well(co-located)
2	34/51-29-SW,SE	Spring 14	Series of springs flowing to 3 ponds; 20 gpm	4-inch well
2	34/51-33-NW,NW	Spring 16	Seep on hillside; pond 1/4-mile downstream; < 1 gpm	
3	33/51-9-NE,NE		Spring in channel near James Creek; 2-3 gpm	2-inch well
3	33/51-10-NW,SW		Series of springs near James Creek; PWR; < 1gpm	Guzzler
3	33/51-10-SE,NW		Hillside spring; < 1 gpm	
3	33/51-10-NE,NW	Spring 20	Altered spring on top of hill; 2-3 gpm	Guzzler
3	33/51-10-SW,NW	Spring 21	3 springs flowing to James Creek; PWR; 30-40 gpm	6-inch well
3	33/51-15-SW,NW	Spring 31	Willow grove and meadow; 1-2 gpm	2-inch well
3	33/51-21-NW,NE	Spring 32	< 1 gpm	
3	33/51-21-SE,NE	Spring 33	1 - 3 gpm	Guzzler
3	33/51-21-SW,SE	Spring 34	Cherry Spring; artesian spring; 2 ponds; 1 + gpm	2-inch well
3	33/51-28-SE,NW	Spring 26	Seep at confluence of 2 drainages; < 1 gpm	Guzzler
3	33/51-33-NE,NW	Spring 35	Seep on hillside; < 1 gpm	
3	33/51-33-NE,NW	Spring 36	Seep on hillside; < 1 gpm	Guzzler
3	33/51-33-SE,NW	Spring 37	Seep on hillside; < 1 gpm	
3	33/51-33-SW,NE	Spring 38	2 hillside springs flowing to breached pond; 2-3 gpm	2-inch well
3	33/51-33-NW,SE	Spring 39	Seep draining to pond; < 1 gpm	

[1] TN = township north; RE = range east; 1/4 section of 1/4 section.

[2] Spring number assigned by Newmont as part of its periodic monitoring program; see Chapter 3, Water Resources.

[3] gpm = gallons per minute; cfs = cubic feet per second; PWR = public water reserve designation by BLM.

Group 1 Seeps and Springs.

Group 1 springs lie within the upper Maggie Creek basin and are geographically dispersed. Wells would be used to replace impacted flows at five of the eight springs in this group. The largest spring site in this group is the series of springs feeding Simon Meadow (34/51-10,NW,SE), which provides a flow of 20-30 gpm. A four-inch well located at the confluence of Simon and Maggie Creek would be installed to provide replacement flow at this site.

In addition, four-inch wells with solar-powered pumps would be installed at Spring 2 (35/51-30-SE,SE) and Spring 3 (35-51-32-NW,NW), which each have flow of approximately 1 gpm. A single four-inch well with a solar powered pump would be used to mitigate two spring sites located in Section 6 T34N, R52E.

Guzzlers would be installed to replace lost water sources at the other three springs in Group 1, as shown on Table II-2.

Group 2 Seeps and Springs.

The springs in Group 2 discharge to Soap Creek and an unnamed drainage of Soap Creek. Spring 14 (43/51-29-SW,SE) is a series of discharge points yielding collectively up to 20 gpm. Spring 16 (34/51-33-NW,NW) is a developed hillside seep with a flow of less than 1 gpm. The flow from these seeps would be mitigated by the installation of one 4-inch well with a solar or diesel powered pump, capable of supplying a total of 25 gpm to Soap Creek in the area of the discharge from Spring 14.

Group 3 Seeps and Springs.

Five springs in this group would, if impacted, be mitigated by replacement of flow. Spring 21 (33-51-10-SW,NW), a Public Water Reserve, is a group of three springs flowing to James Creek, with a total discharge of 30-40 gpm. To replace this flow, a six-inch cased well with a diesel-powered pump would be installed in the area upgradient of spring. A pipeline would carry the water to the three existing discharge points. Any water rights used or obtained to provide replacement flow to these springs would be conveyed to the BLM.

Four two-inch wells powered by solar pumps would be used to replace impacted flow at four other spring areas. The spring located at 33/51-9-NE,NE provides a flow to James Creek of 2-3 gpm. Spring 31 (33/51-15-SW,NW) flows at 1-2 gpm and is

associated with a willow grove and meadow area. Spring 34 (33/51-21-SW,SE), known as the Cherry Creek spring, flows at 1 gpm or more and is associated with 2 pond areas. Spring 38 is a grouping of two hillside springs with flow of 2-3 gpm to a breached pond. In each instance, the well would have the capacity to replace the maximum extent of flow associated with the spring.

Of the remaining ten seeps in Group 3, only two have flow at 1 to 3 gpm; the other eight are all less then 1 gpm. Guzzlers would be installed at five of these ten springs, as shown on Table II-2.

Carlin Cold Springs.

Replacement of the drinking water supply for the Town of Carlin would be provided by Newmont to offset any impacts upon the Carlin Cold Springs from dewatering activities. Well No.1, located in the northwest portion of Carlin, was drilled by Newmont in 1988 to act as a back-up potable water source. It is 654 feet deep and completed with a 12-inch casing and 442 feet of screen. It is completed in lacustrine sediments and volcaniclastic units, and is capable of producing approximately 1200 gpm.

C. STREAMFLOW MITIGATION

1. Summary of Potential Impacts

The cone of depression created by dewatering could reduce flows in some streams in the project area during and/or after the dewatering period. Stream flows would decrease in areas where the cone of depression intercepts groundwater that discharges naturally into the streams. Affected streams could include Maggie Creek and Susie Creek. Some reaches of tributaries of Maggie Creek north and west of the mine, including James, Soap, Simon, and Lynn Creeks, could also experience reduction in base flow. Base flow in the Humboldt River between Carlin and Palisade would be reduced after dewatering ceases. Monitoring and mitigation measures for particular streams are discussed individually below.

2. Surface Water Monitoring

Surface water monitoring of stream flows will be conducted on Maggie, Jack, Mary's, Susie, Simon, and James Creeks, and the Humboldt River. Six continuous recorders are operated by the USGS -- two each on Maggie Creek and the Humboldt River, and one each on Mary's and Susie Creeks. In addition, Newmont has established surface water monitoring stations on Maggie, Susie, Jack, Simon, James, and upper Mary's Creeks. Staff gages and current meters are used to determine normal and high flows at these stations, and flumes are used for low flow readings. The locations of these surface water monitoring stations are shown on Figure II-2.

Surface water flow data collected through these monitoring stations will be analyzed to distinguish natural fluctuations in flows rates from effects attributable to dewatering. Reports of surface water flow data and analyses will be provided to the BLM on a quarterly basis.

EXPLANATION

MAXIMUM EXTENT OF 10Ft DRAWDOWN CONTOUR PROPOSED ACTION (Year 2005)

USGS GAGING STATION

NEWMONT WATER QUALITY SAMPLING STATION

NEWMONT WEIR OR FLUME

FIGURE II-2
SURFACE WATER MONITORING SITES

3. Mitigation Measures for Specific Streams and Rivers

(a) Maggie Creek

Flow in Maggie Creek above the Maggie Creek Canyon (aka the "Narrows") could be temporarily reduced by about 2 to 4 cfs (estimated base flow) after cessation of dewatering. Stream flows in Maggie Creek above the canyon are influenced by springs from the mountain domain areas. Therefore, impacts would be primarily associated with a reduction in base flow for the reach immediately above the canyon.

The Maggie Creek Watershed Restoration Project will mitigate impacts from potential stream flow reductions in Maggie Creek above the canyon. Stream flow augmentation to replace impacted base flow would be implemented only if necessary to maintain functional riparian and aquatic habitat values at pre-project levels.

The implementation of the Maggie Creek Watershed Restoration Project ("Project") will enhance and protect over 40,000 acres in the Maggie Creek basin. The hydrologic benefits to be realized from riparian habitat enhancement along middle and upper Maggie Creek will mitigate the potential ecological effects of the modeled 2-4 cfs baseflow reduction from dewatering. Beneficial effects of the Project will include increased in-stream water depth due to increases in the water table elevation, stabilization of stream banks, and increase extent, health, and vigor of the riparian vegetation.

As discussed in the Riparian and Wetland Habitat section, Newmont will perform vegetation monitoring to determine the effects of the Project. The Maggie Creek channel is expected to develop into a narrow, deep channel that maximizes the utilization of available water.

Stream flow augmentation will be implemented if:

(i) The water level in groundwater monitoring well NMC-2 or groundwater monitoring well MG-4 falls to less than one foot above the elevation of the bed of Maggie Creek (measured at the point nearest the well); and

(ii) Flow at any point in middle Maggie Creek between Jack Creek and the Maggie Creek Canyon falls below 2 cfs.

If these hydrologic circumstances occur, Newmont will consult with the BLM within 14 days and will augment the flows in middle Maggie Creek (below the boundary of the cone of depression as depicted in the DEIS) in accordance with the BLM's instructions, unless directed not to do so by the BLM on the basis of the persistence of good riparian

habitat conditions, or unless Newmont can demonstrate to the BLM's satisfaction, within 45 days of the trigger event, that the water level decline at well NMC-2 or well MG-4 (as the case may be) is not caused by the cone of depression from Gold Quarry dewatering.

Newmont proposes to maintain aquatic habitat and streamside riparian habitat by discharging water into the creek in accordance with the Maggie Creek Streamflow Augmentation Plan, attached as Appendix B to this Mitigation Plan. No grazing of pastures adjacent to this reach of Maggie Creek will occur during flow augmentation. Augmentation will cease in accordance with the provisions of the Augmentation Plan.

The Maggie Creek Streamflow Augmentation Plan also provides for monitoring and possible augmentation in that stretch of Maggie Creek from the confluence with Coyote Creek downstream to the boundary of the cone of depression as depicted in the DEIS.

(b) Susie Creek

Although Susie Creek proper is located beyond the 10-foot drawdown contour, hydrogeologic modelling predicts that base flow in lower Susie Creek may decrease by up to 0.5 cfs.

As discussed in Part I above, Newmont will implement a riparian enhancement project along Susie Creek that includes vegetation management achieved by the addition of fencing along portions of the creek within the impact area, and, contingent upon the agreement of the Maggie Creek Ranch, upstream of the impact area.

If the water level in groundwater monitoring well SC-1 or groundwater monitoring well SC-2 falls to less than one foot above the elevation of the bed of Susie Creek (measured at the point nearest the well), Newmont will commence an intensified surface flow monitoring program, providing for weekly flow measurements at the four staff gages along Susie Creek.

Should this monitoring program reveal that the baseflow in Susie Creek (as determined by the surface flow measurement at the staff gage adjacent to groundwater monitoring well SC-1) has fallen below 0.8 cfs, Newmont will consult with the BLM within 14 days and will augment the flows in Susie Creek in accordance with the BLM's instructions, unless directed not to do so by the BLM on the basis of the persistence of good riparian habitat conditions, or unless Newmont can demonstrate to the BLM's satisfaction, within 45 days of the trigger event, that the water level decline at well SC-1

or well SC-2 (as the case may be) is not caused by the cone of depression from Gold Quarry dewatering.

Augmentation will be conducted according to the Susie Creek Streamflow Augmentation Plan, attached as Appendix C to this Mitigation Plan. This plan provides for the maintenance of at least 0.8 cfs in Susie Creek, as measured at the gage site adjacent to well SC-1, and for the maintenance of at least 0.5 cfs in Susie Creek, as measured at the gage site adjacent to SC-3. Augmentation will cease in accordance with the provisions of the Augmentation Plan.

(c) James, Simon, Lynn, Soap, and East Cottonwood Creeks

Tributaries to Maggie Creek that are located within the 10-foot drawdown contour include James Creek, Simon Creek, Lynn Creek, Soap Creek, and East Cottonwood Creek. Upper reaches of these streams generally are perennial, flowing continuously due to springs in the mountain areas. The lower reaches of these streams are ephemeral or intermittent and generally flow only in response to snowmelt runoff and large precipitation events. Some springs in the lower reaches of these streams provide continuous flow over short reaches. Base flow in portions of these streams could be reduced or lost for a period during and after dewatering.

If seeps and springs that provide flow to these tributaries are impacted by dewatering, supplemental flow will be provided through the installation of groundwater wells near the effected springs. For example, Spring 21 on the Newmont Spring Inventory is a group of three springs providing collectively 30-40 gpm of flow to James Creek. If this spring site is impacted by dewatering, a six-inch well will be installed with either a solar or diesel powered pump to provide replacement flow at this site. The details of mitigation for each spring and seep located within the 10-foot drawdown contour are discussed in Section II(B), Seep and Spring Mitigation.

(d) Humboldt River

Humboldt River flows after cessation of dewatering are estimated to decrease by a maximum of 19 cfs at the Palisade gage and 9 cfs at the Dunphy gage located approximately 25 miles downstream. The estimate of 19 cfs is based upon the best available data regarding the baseflow gain in the Humboldt between the Carlin Tunnels and Palisade gages. After an approximate twenty year period, groundwater recharge should recover sufficiently to result in little or no base flow diminution in the Humboldt River. If a period of low precipitation coincides with the period of maximum dewatering impact, the river could become dry in local areas more frequently than already occurs under pre-dewatering conditions.

Newmont will mitigate potential impacts to irrigation-season flows and water rights holders on the upper and lower Humboldt River by foregoing the use of certain senior irrigation rights controlled by Newmont or the TS Ranch.

A potential fall season impact (loss of aquatic habitat in a portion of the Humboldt River) could occur if the reach that will be subject to baseflow reductions experiences no surface flow during the early fall more frequently than occurs naturally during droughts (as in 1992). This impact will be mitigated by the creation of a wetland complex incorporating some perennial aquatic habitat in the 110-acre site at the lower end of Maggie Creek. This will be designed and maintained so as to minimize secondary impacts. Additional habitat mitigation is described in Section III.

Water Rights Mitigation Program: Middle and Lower Humboldt River Sub-Basins

After cessation of mine dewatering discharge, Newmont will undertake the following program to mitigate potential water losses to irrigation water rights holders in the Middle and Lower Humboldt Sub-Basins. Newmont currently owns or controls senior decreed irrigation water rights in these sub-basins as follows:

- On the Humboldt River under Bartlett Decree No. 00168, with priority dates of 1876 and 1881, and under Edwards Decree No. 00171, with priority dates of 1873, 1886, 1887, 1888, 1890, 1891, 1902 and 1904.

- On Rock and Boulder Creeks under Edwards Decree No. 00333, with priority dates of 1870 and 1875.

Newmont owns or controls senior decreed water rights within these sub-basins in excess of the maximum potential base flow impact, as determined below.

Prior to each irrigation season, Newmont will calculate the amount of acre-feet of water that might be lost during that season based on the projected impact on Humboldt River base flow for that year. This amount (hereinafter referred to as the "Mitigation Water Right") will be calculated as follows:

$$MWR = (B)\ (180/365)\ (723.92)$$

where: MWR = Mitigation water right (in acre-feet)

B = Reduction in base flow at Palisade due to mine dewatering, expressed as cubic feet per second, as predicted by the most recent MINE-DW model recalibration as of the date the calculation is made.

$\frac{180}{365}$ = $\frac{\text{Length of irrigation season}}{\text{Length of year}}$

723.92 = Conversion factor (cfs on annual basis to acre-feet)

Prior to April 1 of each year mitigation is required, Newmont will inform the Water Master of the amount of the Mitigation Water Right and instruct the Water Master to administer a like amount of Newmont's senior decreed water rights within the sub-basins as if they were the most junior water rights in the sub-basins for that irrigation season. Newmont and the Water Master will determine each year which particular Newmont water rights will be used for this purpose.[1/]

In the event the amount of the Mitigation Water Right is below 1000 acre-foot for any given irrigation season, this mitigation program will terminate.

1/ The MINE-DW model uses a non-parametric statistical analysis to estimate the base flow gain between Carlin and Palisade. The model will be refined on an annual basis to reflect the results of Newmont's groundwater monitoring program. In calculating the amount of the Mitigation Water Right, the estimated loss of water due to evaporation from the pit lake also will be considered.

Water Rights Mitigation: Upper Humboldt River Sub-Basin

Newmont currently owns or controls senior decreed irrigation water rights in the Upper Humboldt River Sub-basin as follows:

- On Maggie Creek, Edwards Decree Nos. 00325-329, with a priority date of 1875.

Prior to April 1 of each year irrigation season, Newmont will instruct the Water Master to administer 620 acre-feet (which represents the amount of the Palisade Ranch's water right on the Humboldt River below Carlin and above Palisade) of Newmont's senior decreed water rights within the Sub-basin as if they were junior to the water rights of the Palisade Ranch for that irrigation season.[2/] Newmont and the Water Master will determine each year which particular Newmont water rights will be used for this purpose.

In the event the amount of the Mitigation Water Right (as defined above) is below 620 acre-feet for any given irrigation season, this mitigation program for the Upper Humboldt River Sub-basin will terminate.

D. LIVESTOCK WATER REPLACEMENT

1. Summary of Potential Impacts

The activities at the South Operations Area may result in the reduction of livestock grazing on public lands, particularly where water sources are affected by mine dewatering.

2. Mitigation of Impacts

Newmont will enter into arrangements with existing area ranchers or the BLM, in the case of public land, to replace any stockwater loss caused by mine dewatering. Newmont will use its existing underground water rights (or obtain additional well permits) to provide such replacement water.

2/ Newmont's water rights on Maggie Creek are senior in priority to those of the Palisade Ranch, the latter of which hold an 1880 priority date.

E. STREAM CHANNEL STABILITY

1. Summary of Potential Impacts

The discharge of up to 104 cfs of excess mine water on a continuous basis to Maggie Creek would result in increased erosion because of the naturally high erodibility of the stream bank in the lower reaches of the creek. The high sediment transport and sediment supply projected for the Maggie Creek channel are due to the increase in flow in the existing channel. The Humboldt River is not expected to experience increased erosion because of its much larger channel capacity and fair to moderate bank stability.

2. Stream Channel Stability Mitigation Measures

The mitigation for the potential impacts resulting from the discharge of mine water to Maggie Creek will use proven technology to improve the existing channel stability problems. These techniques focus in four areas: sediment transport and supply, bank erosion, vertical stability, and channel adjustments.

An energy dissipation structure will be constructed to provide a low hydraulic head, low velocity discharge of the mine discharge water into the Maggie Creek channel. It is anticipated that eleven reaches of the Maggie Creek channel will be contoured and selectively armored with rip-rap to stabilize the bank. This methodology would require modifying the upper bank by mechanical excavation to form a narrow terrace. This upper terrace would then be graded to a stable slope of approximately 2:1 or 3:1(H:V). The lower portion of the bank, i.e. the low flow bank, would be contoured to 2:1 slope and protected with rip-rap. The gradation and size will be designed to enhance the stability within each reach to be modified. In select applications, rock vanes may be utilized instead of the rip-rap.

Strategically located graded, rip-rap banks and rock vanes will be constructed in selected reaches to stabilize critical reaches of stream bank. These will also serve to reduce the average stream velocity, which will increase the vertical stability of the channel.

Willow transplants will be spot planted in selected critical areas of the channel, such as the outside bank of some channel bends. Willows, which naturally occur in the region, are rapid growing and provide a deep rooting depth and high density. These features are well suited to enhancing bank stability and dissipating stream flow energy. Local experience has shown that riparian plant species rapidly colonize any areas of

saturated soil. This natural process will continue to enhance channel stability as water flows into Maggie Creek. Select areas, critical to stream bank stability, may be fenced to exclude livestock grazing along the Maggie Creek channel as necessary.

An approximately 110 acre polishing wetlands will be constructed near the mouth of Maggie Creek. This wetland will be located in an area between Interstate 80 and the East Carlin access road (see Figure II-3). The wetlands will be constructed to retard or detain surface flow, thereby causing residual sediment to settle. Diversion structures will be placed in Maggie Creek to allow distribution of water along the upper end of the wetland area. Downstream collection structures will be placed to allow the channelization of water into the Humboldt River.

The instream diversion structures supplying water to the wetland bypass will be constructed to pass through flows in excess of the 104 cfs maximum mine water discharge. Local experience has shown that wetland plant species rapidly colonize any areas of saturated soil or shallow water. However, the wetlands area will be spot planted with wetland plant species adapted to the expected water depths in the area of planting. Recruitment from these plantings as well as native wind borne seeds will rapidly vegetate the wetlands area.

The construction and implementation of the aforementioned activities will successfully reduce the sediment supply and reduce the average stream velocities. The implementation of appropriate stabilization design technologies will result in no measurable increase in sedimentation to the Humboldt River from the proposed Plan of Operations.

3. Monitoring

The structures and vegetation placed to stabilize the Maggie Creek channel will be periodically inspected by Newmont personnel to assure their continued function. The inspection frequency will be bi-weekly. Additional inspections will occur immediately after periods of high runoff. All total suspended sediment data collected in compliance with the Nevada NPDES permit will be submitted to the BLM concurrently with the State submission.

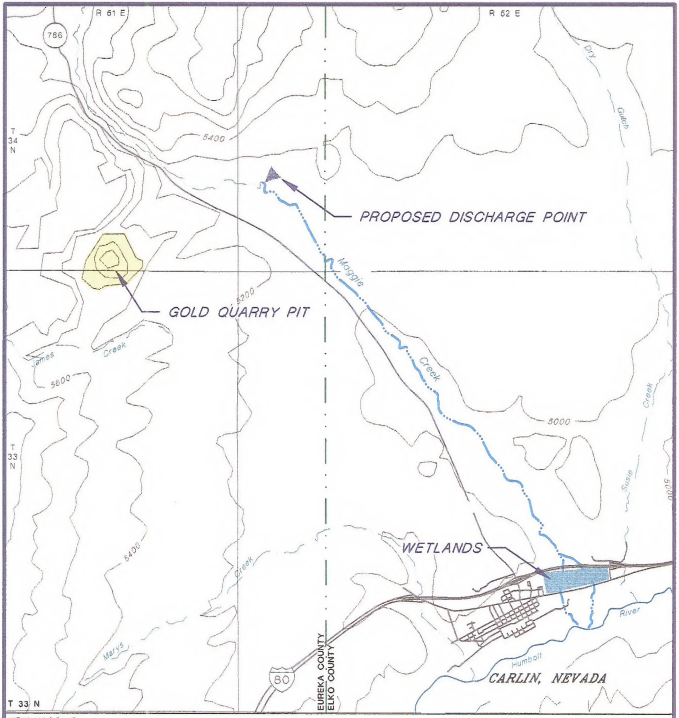


FIGURE II-3
LOWER MAGGIE CREEK SEDIMENTATION

F. STREAM TEMPERATURE

1. Summary of Impacts

Groundwater withdrawn from the Gold Quarry pit dewatering is warm, averaging 77° F. The untreated discharge of this water into Maggie Creek would increase the ambient temperature in the Humboldt River during the low flow season (September to March). Such increase might result in the violation of the Nevada water quality standard for temperature in the Humboldt River (which does not permit a change of more than two degrees above or below ambient temperatures in the River).

2. Mitigation of Impacts

Pursuant to the terms of an NPDES permit to be issued by the Nevada Division of Environmental Protection, Newmont will construct and operate up to two cooling towers to cool withdrawn groundwater prior to discharge into Maggie Creek. No cooling tower will be needed until September 1994, at which point the first cooling tower will be ready to operate. The second tower will be constructed if and when needed.

The use of cooling towers, combined with natural cooling that will occur in the pipeline from the groundwater wells to the towers, in the Maggie Creek channel, and in the proposed wetlands to be constructed in lower Maggie Creek (see Section III.E above), will assure compliance with the Nevada water quality standard for temperature in the Humboldt River.

G. OTHER WATER QUALITY ISSUES

1. Summary of Impacts.

Ground water, direct precipitation, snow melt, and stormwater runoff infiltrating potentially acid producing material in ore stockpiles and waste rock disposal areas could become acidic, thereby leaching and dissolving metals and other potentially hazardous materials into ground or surface waters.

Stormwater also might come into contact with other mining and processing facilities and process solutions, thereby discharging pollutants into adjacent water courses.

2. Mitigation of Impacts.

Newmont has implemented programs, procedures, and designs to limit the potential for the generation of acid mine drainage from ore stockpiles and waste rock disposal areas. Newmont currently has an extensive program designed to identify sources of potentially acid-producing material well before it is encountered during mining. This allows the material to be mined and placed in specific areas designated for potentially acid-generating waste. These specific stockpiles and disposal areas are designed to prevent vertical migration of water and to contain lateral surface flows off the piles. Ditches and berms are inspected quarterly, and facilities are inspected when flood conditions exist.

Newmont has obtained a stormwater permit that regulates storm water discharges from the South Operations Area. Best Management Practices (BMP) are used to control stormwater discharges, including preventative maintenance, visual inspections and other monitoring, material handling practices that minimize the exposure of pollutants to stormwater, spill prevention and response, sediment and erosion control, and physical stormwater controls.

Newmont also has obtained zero discharge permits that regulate the design, construction, operation and closure of facilities containing process solutions containing potentially hazardous materials. Examples of these facilities include heap leach and tailings storage facilities. Each permit requires the monitoring of the fluid management systems at designated locations and frequencies, to assure that no releases of process solution to the environment are occurring. Example monitoring locations include: seepage collection pond sumps, piezometers within the tailing storage impoundment embankment, leak detection systems for leach pad liners, and monitoring wells. Early detection of potential problems, along with consequent remediation, if necessary, are key elements of each permit.

III. AQUATIC HABITAT AND FISHERIES

A. SUMMARY OF POTENTIAL IMPACTS.

Mine dewatering may result in reduced flows in Maggie Creek and the Humboldt River due to reductions in base flow to these surface water bodies. The proposed discharge of dewatering flow into Maggie Creek would, in the absence of mitigation or treatment, result in increased sediment loads and high water temperature in Maggie Creek and the Humboldt River.

If these impacts were allowed to occur, habitat for fish and other aquatic organisms would be adversely affected.

B. MITIGATION OF IMPACTS.

1. Streamflows

The streamflow mitigation measures discussed in Section I, Riparian and Wetland Habitat, and Section II, Water Resources, of this Mitigation Plan will prevent any adverse impact to aquatic habitat and fisheries within Maggie Creek or the Humboldt River due to reduced flows.

2. Sedimentation and Temperature

The mitigation measures described in Section II.E, Stream Channel Stability, and Section II.F, Water Temperature, will prevent any loss of or damage to aquatic habitat or fisheries within the project area due to increased sedimentation or water temperature.

3. Humboldt River

Under present conditions, flow in portions of the Humboldt River ceases during the fall when precipitation is low for several successive years. Such conditions occurred during 1992. Following the cessation of dewatering of the Gold Quarry pit, and before the cone of depression has recovered, base flow contribution to the Humboldt River is predicted to be reduced. If a period of low precipitation coincides with the period of maximum dewatering impact, the river could become dry in local areas more frequently than already occurs under pre-dewatering conditions.

Studies of aquatic invertebrates in the Humboldt River during 1993 showed that, in the season following a no-flow event, diversity and biomass of these organisms is reduced, although they will ultimately recolonize unoccupied habitat through natural processes. Aquatic invertebrates have extremely high potential reproductive rates and can rapidly re-establish their populations if any individuals are present.

In the event that a segment of the Humboldt River within the impact area dries up during the groundwater recovery period, Newmont will provide, as directed by BLM, a catalyst to the artificial recolonization of that segment with invertebrates, as soon as flow returns to the affected stretch of the river. This will be accomplished by transplanting buckets of wet coarse and fine bottom sediments taken from nearby (preferably upstream) portions of the river that did not experience a cessation of flow. Monitoring results from a wide variety of wetland creation projects suggest that this action is likely to restore invertebrate populations much more rapidly than would occur by natural dispersal. In addition, the potential impact of no flow will be mitigated by the creation of a wetland complex incorporating some perennial aquatic habitat in a 110-acre site at the lower end of Maggie Creek.

IV. THREATENED, ENDANGERED, AND CANDIDATE SPECIES AND SPECIES OF SPECIAL CONCERN

A. SUMMARY OF POTENTIAL IMPACTS.

The DEIS identifies the potential for impacts upon Lahontan cutthroat trout (LCT) in middle Maggie Creek, where an individual of the species was found in 1980. Additional surveys undertaken by NDOW and Newmont's consultants in 1993 revealed that LCT were not present within the impact area. Thus, LCT is not expected to experience any impacts from mine dewatering. Occupied habitat in Little Jack, Coyote and upper Maggie Creek is outside the impact area. Dewatering could potentially reduce flows only in segments of Susie Creek and Maggie Creek that represent restoration opportunities. Potential impacts upon threatened, endangered, and candidate species, and species of special concern, are discussed in greater detail in the Biological Assessment prepared for the South Operations Area Project.

Several candidate species that utilize aquatic or adjacent riparian habitat could be affected. The Mitigation Plan, as presented, will assure that no adverse impacts to candidate species or species of special concern occur as a result of implementation of the proposed action.

B. MITIGATION MEASURES.

As noted above, LCT is not expected to experience any impacts from mine dewatering. Occupied habitat in Little Jack, Coyote and upper Maggie Creek is outside the impact area. However, if the groundwater level in monitoring well JCK-3 (or, if appropriate, monitoring well MAG-C as depicted in Figure 3 of Appendix B) falls to less than one foot above the elevation of the bed of Maggie Creek (measured at the point nearest the well), Newmont will consult with BLM regarding the cause of this decline, any potential impacts on LCT, possible further mitigation measures and, as appropriate, consultation under the Endangered Species Act. Furthermore, Newmont will conduct periodic surveys for LCT along middle Maggie Creek and environs as directed by BLM in consultation with the U.S. Fish & Wildlife Service and the Nevada Division of Wildlife.

Improvements to riparian habitat conditions within the zone of impact as well as on Coyote and Little Jack creeks, which will result from implementation of the Mitigation Plan as described in Section I, should mitigate potential impacts to pygmy rabbits, Preble's shrew, ferruginous hawk, white-faced ibis, spotted frog, California floater and Nevada viceroy. In addition, restoration of 800 acres of degraded mule deer transition range on the west slope of the Tuscarora Mountains and reclamation of disturbed areas with desirable plant species should

mitigate possible impacts to loggerhead shrikes. All other candidate species or species of special concern occur outside of the zone of effect or have been determined to not be impacted by the proposed action.

In addition to the mitigation measures identified in Section I, additional precautionary measures to eliminate impacts to any candidate species or species of special concern have been developed, which include:

1. Flow augmentation as required on Maggie and Susie creeks, as presented in Appendix B and C of the Mitigation Plan, as well as for any impacted springs and seeps.

2. Monitoring of well JKC-3 adjacent to the spring complex on lower Jack/Little Jack creeks in order to determine the need for augmentation to this area where a known spotted frog populations exist. If the groundwater level in well JKC-3 falls to less than one foot above the elevation of the spring complex, Newmont will initiate consultation with the BLM within fourteen days and, if necessary, augment flows to this spring complex. In addition, if a significant portion of the springs within the spring complex cease to flow without a commensurate increase in flow in the remaining springs within the complex, mitigation of flows will commence within sixty days, unless BLM directs otherwise or unless Newmont can demonstrate to BLM's satisfaction that the cessation of flows is not attributable to pit dewatering within the sixty day period.

3. Monitoring of well SIC-1 in order to determine the need for maintenance of the Lynn Creek ponds, which will offset any possible impacts to Townsend's big-eared bats. If the groundwater level in SIC-1 drops more than 10 feet from the baseline level recorded in October 1993, Newmont will initiate, within fourteen days, consultation with the BLM concerning possible maintenance of the Lynn Creek ponds. Concurrently, monthly monitoring of the water level in the ponds would commence. In addition, if the Lynn Creek ponds begin to dry up, mitigation will commence within sixty days, unless BLM directs otherwise or unless Newmont can demonstrate to BLM's satisfaction that the decreased water level in the ponds is not attributable to pit dewatering within the sixty day period.

4. Fencing of the existing aspen grove containing the Goshawk nest site on the West Fork of Cottonwood Creek to reduce grazing impacts and improve foraging habitat.

5. If the modeled impact zone, as determined by the annual recalibrated MINE-DW model, extends to that portion of Maggie Creek in which two California floaters were found, or if the groundwater level in well MAG-A (as depicted in Figure 3 of Appendix B) falls to less than one foot above the elevation of the bed of Maggie Creek (at the point nearest the well), a study will be conducted by a third party agreeable to Newmont and

the BLM to determine if a viable population of California floaters exists in this reach of the creek. If the groundwater level in well MAG-B (as depicted in Figure 3 of Appendix B) falls to less than one foot above the elevation of the bed of Maggie Creek at this point, Newmont will initiate, within fourteen days, consultation with the BLM concerning possible augmentation of Maggie Creek below the confluence of Coyote Creek and Maggie Creek.

6. A population of spring snails occurs in several springs located well outside the project impact boundary. Although these springs should not be impacted by the proposed action, monitoring of groundwater elevations in the vicinity of the closest spring snail site will be initiated at groundwater well PAL-1. Should the groundwater level in monitoring well PAL-1 fall more than 10 feet from its October 1993 level, or if the annual recalibration of the MINE-DW model shows a potential impact to this area, Newmont will initiate, within fourteen days, consultation with the BLM concerning appropriate further studies and/or mitigation. See DEIS at Page 4-87.

V. TERRESTRIAL WILDLIFE

A. SUMMARY OF POTENTIAL IMPACTS.

The primary impact of the proposed action on terrestrial wildlife will be the temporary loss or disturbance of habitat. Some of this loss will be pronghorn winter range and/or mule deer transitional range. Additionally, the North Area Haul Road might impede seasonal migration of mule deer.

Flow reductions in some springs and small streams due to mine dewatering would impact terrestrial wildlife dependent on these sites and might impact the distribution of other species that use these sites as part of a larger habitat complex.

B. MITIGATION OF IMPACTS.

Newmont will undertake the following mitigation measures to address these impacts:

1. Reclamation.

Newmont's reclamation plan, which is part of the proposed Plan of Operations, will commence as affected areas become available during mining operations or when mining operations in the South Operations Area are completed. At that time, disturbed areas will be regraded to a configuration consistent with the adjacent undisturbed areas, covered with soil or plant growth material, and revegetated with plants capable of providing long-term self-sustaining wildlife habitat. Thus, most impacts to wildlife resulting from the proposed action are temporal in nature and will no longer exist once the reclamation plan is completed.

As part of this Mitigation Plan, Newmont has provided for certain enhancements to its reclamation plan, more fully described in Section VI, that will result in greater post-mining upland habitat values than would the standard reclamation procedures specified in the Plan of Operations and analyzed in the DEIS. These values will be derived from a greater biodiversity, and probably biomass, of vegetation and would directly benefit not only species specifically mentioned in the DEIS (i.e. deer and pronghorn antelope) but also smaller herbivores and birds. This also will provide a greater prey base for predators.

The construction of overhangs and alcoves within the final pit walls will provide potential aeries for a variety of raptors, including species that are locally common (e.g.

golden eagle, prairie falcon) and others that are rare, for which other suitable habitat does not occur in the region (e.g. peregrine falcon).

2. Maggie Creek Watershed Restoration Project.

The mitigation measures discussed in Section I, Riparian and Wetland Habitat, and Section II, Water Resources, will prevent any impacts to wildlife due to stream or spring flow reductions. Specifically, the Maggie Creek Watershed Restoration Project will improve wildlife habitat within the riparian and wetlands areas adjacent to Maggie, Little Jack and Coyote Creeks. The Maggie Creek Watershed Restoration Project will increase the amount and diversity of woody and herbaceous forage available and provide dense cover for a wide variety of riparian and upland species, including species that may be temporarily displaced from the mine site by surface disturbance. The increased woody vegetation resulting from the Maggie Creek Watershed Restoration Project also will provide den sites for mammals and nest sites for a variety of bird species, ultimately including raptors (when the trees grow tall enough). Reduction of livestock grazing in the upland pastures will make more forage available for native herbivores, which often are observed to cross barbed-wire fences with little difficulty.

Any fencing required as part of the Maggie Creek Watershed Restoration Project or as part of the mitigation plan for seep and spring protection will be constructed in accordance with BLM fence specifications.

3. North Area Haul Road.

Mitigation of the potential impacts of the North Area Haul Road on seasonal migration of mule deer will be accomplished by a combination of haul road design and operational considerations.

First, Newmont will locate water sources for its cattle west of the haul road. As a result, it should not be necessary to build any fences adjacent to the haul road. To the extent fencing is needed in certain discreet areas, for example near the confluence of Simon and Lynn Creeks, for cattle exclusion, the fences will be built to the specifications described above. Also, fencing will be removed or relocated along upper Simon Creek to the extent feasible.

Second, the portion of the haul road passing through Section 13, T.35N, R.50E, and Section 19, T.35N, R.51E, which has been identified as a key migration corridor, will have the following design parameters:

- Fill slopes will be no greater than 2:1 (H:V).

- Cut slopes will be no greater than 2:1 (H:V).

- Subject to MSHA approval, gaps of three to five feet in length will be left in safety berms to allow ready access for the deer. The frequency of these gaps will be approximately 250 feet.

- A 31 foot-wide deer staging area will be constructed between the top of the fill slope and the outside toe of the safety berm. See Figure V-1 (Cut/Fill Profile) and Figure V-2 (Fill/Fill Profile).[3/]

- Shrubs will be planted within the staging areas, to provide cover for the deer. By seeding or planting bitterbrush within the staging areas at the bottom of all the fill slopes, a brush zone will be created. Bitterbrush also will be seeded or planted from the bottom of the fill slopes to the berm gaps. The brush zone at the bottom of the fill slopes will gather the deer and the brush going to the berm gaps should facilitate their movement to the crossing areas. A basic configuration of a wide brush zone at the bottom of the slope, narrowing as it approaches the berm gaps, will be maintained. The bitterbrush will be included in a grass-bitterbrush seed mix rather than seeded separately, using the species identified in Table V-1.

- The areas on the cut and fill slopes will be seeded with a grass-forb-shrub mix, using the species identified in Table V-2.

These design features are illustrated in Figure V-3. Seeding will be conducted in the first fall season following haul road construction, unless earlier seeding is directed by the BLM. Finally, signs will be posted warning drivers of the presence of deer herds along the road corridor, and, prior to each migration season, drivers will be reminded to watch for deer.

Evaluation of problem crossing sites will be conducted in concert with NDOW and BLM in order to implement changes in operational procedures if necessary to further reduce impacts. Possible changes Newmont could implement would include: (1) haul trucks could travel in convoys rather than individually near sunrise and sunset, when deer migration activity peaks daily, (2) hauling could cease during sunrise and sunset during select times of peak migration, and (3) a pilot car could accompany haul trucks during nighttime hauling. Should they occur, incidents of deer mortality due to road traffic will be reported to NDOW.

3/ The operating road width, as defined in Figures V-1 and V-2, may change depending on final selection of the haulage fleet.

FIGURE V-1

MULE DEER MIGRATION CORRIDOR TYPICAL HAULROAD CUT/FILL PROFILE

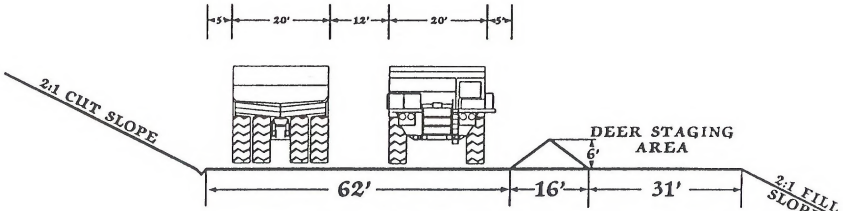
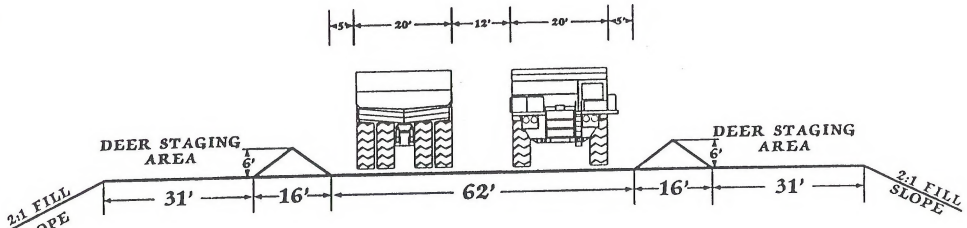


FIGURE V-2

MULE DEER MIGRATION CORRIDOR
TYPICAL HAULROAD FILL/FILL PROFILE



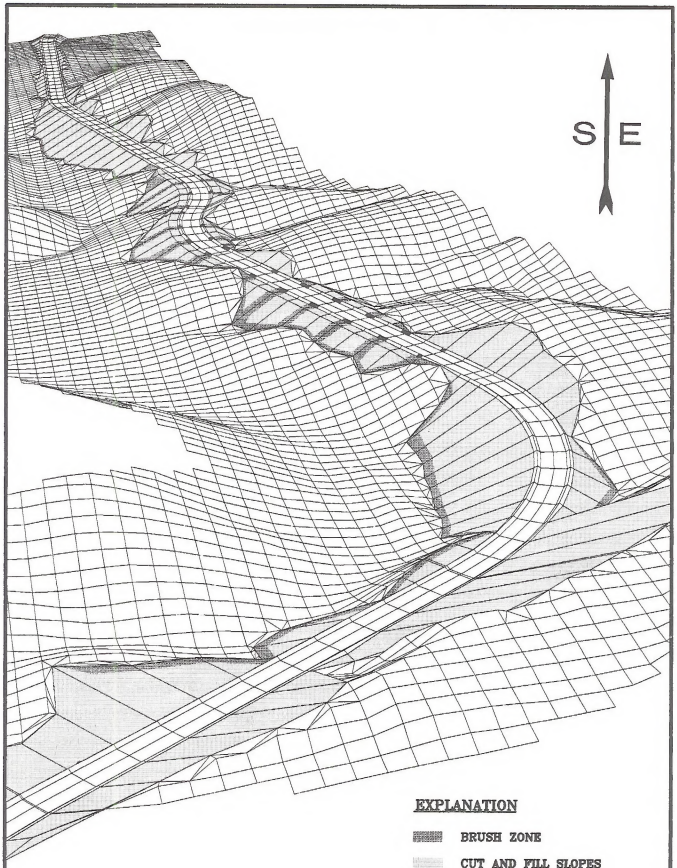


FIGURE V – 3
UPPER HAUL ROAD DESIGN AND SEEDING PLAN

TABLE V-1

SEED MIXTURE FOR HAUL ROAD BRUSH ZONES

Species for bitterbrush-grass "brush zone" area.

SPECIES	lbs PLS	OPTIONAL[1]
Bluebunch wheatgrass or Snake River wheatgrass (Secar)	2.5	No
Great Basin wildrye	1.0	No
Sandberg bluegrass	1.0	No
Thickspike wheatgrass	1.0 - 2.0	Yes
Idaho fescue (Joseph) of Sheep fescue (Covar)	1.0 - 2.0	Yes
Western yarrow	0.5 - 1.0	Yes
Gooseberry leaf globemallow	1.0	Yes

[1] No indicates that the species is part of the base seed mix. Yes indicates that the species may or may not be included in the mix, depending on availability or cost. However, at least 8 lbs PLS of seed should be applied.

TABLE V-2

SEED MIXTURE FOR HAUL ROAD CUT AND FILL SLOPES

Species for cut and fill slopes.

SPECIES	lbs PLS	OPTIONAL[1]
Bluebunch wheatgrass or Snake River wheatgrass (Secar)	2.5	No
Great Basin wildrye	1.0	No
Sandberg bluegrass	1.0	No
Thickspike wheatgrass	1.0 - 2.0	No
Idaho fescue (Joseph) or Sheep fescue (Covar)	1.0 - 2.0	Yes
Western yarrow	0.5 - 1.0	Yes
Narrowleaf Indian paintbrush	1.0	Yes
Arrowleaf balsamroot	1.0	Yes
Palmer penstemon	1.0	Yes
Gooseberry leaf globemallow	1.0	Yes
Common snowberry	1.0 - 2.0	No

[1] No indicates that the species is part of the base seed mix. Yes indicates that the species may or may not be included in the mix, depending on availability or cost. However, at least 10 lbs PLS of seed should be applied.

4. Dunphy Hills Winter Range/Tuscarora Transition Range Restoration.

Newmont, in conjunction with the TS Ranch and NDOW, will continue its reseeding and improvement program in the Dunphy Hills, a critical mule deer winter range with currently poor vegetative cover. Large acreages in the Dunphy Hills were ravaged by range fires in the 1960s, and these burned areas now are dominated by cheatgrass, a poor forage for deer.

The first phase of this program was implemented during 1992. This phase consisted of (1) seeding a 300 acre, 100 feet-wide fire-retardant greenstrip area along the perimeter of the winter range improvement area with crested wheatgrass and four wing salt brush; (2) seeding a 1000 acre area within the greenstrip with various grasses including crested wheatgrass, ryegrass and alfalfa; and (3) overseeding the same 1000 acre area with sagebrush and rabbitbrush. The two remaining phases of the existing program are scheduled for completion in 1994 and 1995 respectively. The second and third phases each will cover an additional 1000 acres within the program area and will consist of (1) core seeding with various grasses and (2) overseeding with sagebrush and rabbitbrush. Newmont and the TS Ranch also will control livestock grazing within the recovery area, through use of fencing and the development of alternative water sources for the cattle.

Utilization cages will be placed throughout the winter range improvement area. All three phases of the program will be closely monitored by Newmont, BLM and NDOW personnel.

In addition, during 1994 or 1995, Newmont will seed (on a one-time basis) 800 acres of mule deer transition range on public land, on the western flank of the Tuscarora Mountains (in locations to be determined in consultation with BLM), in accordance with Table V-3 attached hereto.

Finally, as part of this program, Newmont fabricated and built a sagebrush seeder. At the completion of the program, Newmont will donate the sagebrush seeder to NDOW for use throughout Nevada.

TABLE V-3

SEED MIXTURE FOR MULE DEER TRANSITION RANGE

Species for transition habitat mitigation

SPECIES	lbs PLS	OPTIONAL[1]
Bluebunch wheatgrass or Snake River wheatgrass (Secar)	2.5	No
Great Basin wildrye	1.0	Yes
Sandberg bluegrass	1.0	No
Western wheatgrasss (Arriba or Rosanna)	1.0 - 2.0	No
Crested wheatgrass (Ephraim)	2.0	No
Intermediate wheatgrass (Greenar)	1.0 - 2.0	Yes
Idaho fescue (Joseph) or Sheep fescue (Covar)	1.0 - 2.0	Yes
Western Yarrow	0.5 - 1.0	Yes
Gooseberry leaf globemallow	1.0	Yes
Wyoming big sagebrush	0.25	No
Fourwing saltbush	0.5 - 1.0	No
Rubber rabbitbrush	.05	Yes

[1] No indicates that the species is part of the base seed mix. Yes indicates that the species may or may not be included in the mix, depending on availability or cost. However, at least 12 lbs PLS of seed should be applied.

5. Upland Game Bird Rearing Facility/Chukar Guzzlers.

In a cooperative effort with the Elko Chapter of Chukars Unlimited, a non-profit organization, Newmont has provided the facility and much of the materials and labor to build an Upland Game Bird Rearing Facility on Newmont property. This facility currently has the capacity to raise 4,000 game birds. The birds are raised for game bird population reestablishment throughout Nevada and for research purposes.

In cooperation with NDOW, Newmont has fabricated and installed eight chukar guzzlers in northern Nevada. Two guzzlers were installed (for research purposes) at the Upland Game Bird Rearing Facility referenced above. Six guzzlers were installed near Richmond Mountain at sites located by NDOW biologists. The installation of guzzlers is critical to reestablishment of the northern Nevada bird population devastated by recent drought conditions.

6. Other Mitigation Measures.

Newmont also intends to undertake the following steps with regard to protection of wildlife:

- Service and access roads along with powerline alignments will be limited to nonsensitive locations, avoiding critical wildlife habitats.
- All power lines to be built will be raptor-proof to avoid electrocution of raptors.
- Fencing will be erected around operational areas deemed to be hazardous to wildlife.

VI. SOILS, VEGETATION, AND VISUAL RESOURCES

A. SUMMARY OF IMPACTS

Impacts on soils occur in two separate stages during mining operations: 1) soil losses during mining, 2) soil losses between final topsoil redistribution and completion of reclamation. Direct impacts from the proposed Plan of Operations on soil would include modification to soil chemical and physical characteristics and decreased biological activity.

The proposed Plan of Operations would effect vegetation at the mine facilities and within the transportation corridors. Approximately 1,573 acres of primarily lower elevation sagebrush-bunchgrass community types in deteriorated range condition would be impacted. Hydrologic changes within the groundwater cone-of-depression are not expected to impact uplands vegetation.

Impacts from the proposed Plan of Operations also would include large scale modification of landforms. Angular, blocky forms and horizontal lines would create moderate contrasts with the natural rounded, rolling hills and ridges of the characteristic landscape.

B. SUMMARY OF EXISTING RECLAMATION PLAN

Newmont has committed to a comprehensive reclamation plan in order to achieve post-mining objectives of livestock grazing, wildlife habitat, and recreational use.
The reclamation plan includes: detoxification of heaps, drain down and evaporation of process water, regrading of haul roads, waste rock piles, heap leach pads, tailing impoundments, tailing embankments, process ponds, and ancillary facility areas, erosion and sedimentation control measures, topsoil placement, amendments and fertilization, seeding, and post-reclamation monitoring to ensure stabilization has been accomplished and revegetation is successful.

This reclamation will entail establishing a self-sustaining, high quality, diverse ecosystem on most disturbed land. Recontouring of the mine facilities, combined with the establishment of vegetation, will minimize the impact on visual resources.

C. ENHANCED RECLAMATION TECHNIQUES

In addition to the reclamation plan that has been developed, additional steps will be taken to provide enhanced reclamation and re-establishment of pre-mining land uses. The reclamation package will use state of the art reclamation techniques that will result in the establishment of

productive and self-sustaining diverse ecological systems. The reclamation package will establish stable land forms which will be geomorphologically contemporaneous with adjacent topography to the greatest extent practicable. This will result in the restoration of an aesthetically pleasing viewshed which will be compatible with the natural setting and achieve the principal land uses of wildlife habitat and livestock grazing.

These aforementioned reclamation techniques will provide effective control of erosion and sedimentation and provide stability under design storm flow conditions which ensure performance.

The additional reclamation efforts and innovative planning techniques include:

- Topsoil Management Plan
- Intensified Test Plot Programs
- Establishment of Diversified Ecosystems
- Implementing Landscape Considerations
- Raptor Habitat Enhancement and Additional Reclamation.

These additional reclamation concepts will be evaluated and implemented as appropriate. The following sections describe these activities in more detail.

1. Topsoil Management Plan.

Newmont will implement comprehensive topsoil management that will optimize the recovery of the limited quantities of available topsoil within mining operation areas. The topsoil management plan includes the removal and stockpiling of all practicably available topsoil. Topsoil occurs within the proposed disturbance areas at depths up to five feet. As is currently practiced, all topsoil stockpiles will be located in readily identifiable areas, and graded and vegetated to provide a stable pile until required for use in reclamation.

2. Intensified Test Plot Program.

The use of the test plot program was required in the Mill 2/5 Tailing Storage Facility Environmental Assessment Record of Decision. To further develop and refine the site specific reclamation techniques, the test plot program will be adjusted (in consultation with BLM) to identify the optimum combination of soil depth, soil amendments and plant species for a variety of disturbances and settings that will result from mining operations, to meet the goals of biological diversity and productivity.

For example, different topsoil depths will be tested along with different combinations of organic and inorganic amendments to identify the optimum plant growth medium for the various disturbance conditions. Combinations of plant species will also be tested to determine (i) which are the most adaptable to the selected site conditions to support livestock grazing and produce quality habitat for the diversity of wildlife species (game and nongame birds and mammals) indigenous to this area, and (ii) which are in harmony with native vegetation communities.

3. Establishment of Diversified Ecosystems.

Reclamation will create a diverse ecosystem that will be similar to that which occurred in the area prior to disturbance. This will be accomplished by establishing slopes with different exposures and steepness. In addition, topsoil depth will be varied according to slope setting and topographic position along a slope.

For example, north facing slopes or low-lying areas will receive more topsoil application than south exposures or ridge tops. Plant species combinations will be matched to soil and topographic conditions to assure initial establishment and long-term sustainability. These combinations of soil and plant conditions along with strategic placement of large rocks on the ground surface will result in the establishment of a variety of community and habitat types that will support the flora and fauna that are native inhabitants of this area. Mosaics or strips of different species mixes may be employed, where appropriate and feasible, to maximize habitat diversity.

Specific locations will be identified, based on topographic position, to become shrub communities. These areas will receive additional topsoil (12 to 18 inches) and be planted with several shrub species such as Wyoming big sagebrush *(A. tridentata wyomingensis),* mountain big sagebrush *(A. tridentata vaseyana),* antelope bitterbrush *(Purshia tridentata),* Saskatoon serviceberry *(Amelanchier alnifolia),* fourwing saltbrush *(Atripex canescens),* and Shadscale *(Atriplex confertifolia).* Appropriate shrub species or combinations will be selected on a site-specific basis: for example, black sagebrush *(Artemisia arbuscula nova)* will be used only where suitable calcareous soils are placed.

Shrub planting will consist of both transplants and seed. The sagebrush species will be seeded and those species that take longer to establish from seed (i.e. bitterbrush and serviceberry) will be both seeded and transplanted with containerized seedlings. These shrub islands will vary in size from 1 acre up to 5 acres, depending upon the topographic conditions, and be located in areas that will naturally receive more moisture (e.g. north and east exposures, depressions, or low-lying areas). These shrub islands will provide cover and food for wildlife species in addition to that provided by the overall

reclamation plan. The seed mixtures proposed for reclamation on the remainder of the property may also include shrub species in combination with a herbaceous component of grasses and forbs, or may be purely herbaceous.

In order to increase the composition of shrubs and reduce the composition of exotic species in the established plant communities, the following mitigation measures would be followed. Crested wheatgrass and pubescent wheatgrass would be removed from the south and west exposures mixture, unless test plot results indicate these species are essential for soil stabilization, and replaced with thickspike wheatgrass at 1 lb of PLS/acre. Antelope bitterbrush would be added to both the south and west exposure mixtures and the north and east exposure mixtures at a seeding rate of 2 lbs of PLS/acre (see Tables VI-1 and VI-2). These changes would increase the diversity of more desirable species for wildlife and ultimately result in the creation of more favorable habitat.

Species more palatable and nutritious for deer will replace other proposed reclamation species in deer migration paths to provide readily available browsing locations. Tables VI-1 and VI-2 show the species that potentially could be used when reclaiming the deer migration routes. The average application rate for each species is also shown. These species will be combined in mixtures of perhaps 6 to 10 species and applied at total rates of up to 10-14 lbs PLS/acre.

Table VI-1

Plant Species for Seeding of North and East Exposures

Species	Drilling Rate PLS-lbs/acre
Thickspike wheatgrass *(Agropyron dasystachyum)*	2
Streambank wheatgrass *(Agropyron riparium)*	2 *
Bluebunch wheatgrass *(Agropyron spicatum)*	2 *
Slender wheatgrass *(Agropyron trachycaulum)*	1
Great basin wildrye *(Elymus cinereus)*	2 *
Sheep fescue *(Festuca ovina)*	0.5
Western yarrow *(Achillea lanulosa)*	0.5 *
Cicer milkvetch *(Astragalus cicer)*	1
Northern sweetvetch *(Hedysarum boreale)*	1
Lewis flax *(Linum lewisii)*	1
Small burnett *(Sanguisorba minor)*	1
Gooseberry leaf globemallow *(Sphaeralcea grossulariifolia)*	1
Utah serviceberry *(Amelanchier utahensis)*	1
Antelope bitterbrush *(Purshia tridentata)*	1
Mountain snowberry *(Symphoricarpos albus)*	2
Black sagebrush *(Artemisia arbuscula nova)*	0.5
Mountain big sagebrush *(Artemisia tridentata vaseyana)*	0.5
True mountain mahogany *(Cercocarpus montanus)*	2

* Indicates that the species is part of the base seed mix. Remaining species can be included based on cost and availability to reach a minimum seeding rate of 10 lbs PLS.

Table VI-2

Plant Species for Seeding of South and West Exposures

Species	Drilling Rate PLS-lbs/acre
Thickspike wheatgrass *(Agropyron dasystachyum)*	2 *
Western wheatgrass *(Agropyron smithii)*	2 *
Bluebunch wheatgrass *(Agropyron spicatum)*	1
Indian ricegrass *(Oryzopsis hymenoides)*	2
Great basin wildrye *(Elymus cinereus)*	1
Sandberg bluegrass *(Poa secunda)*	0.5 *
Palmer penstemon *(Penstemon palmeri)*	1
Northern sweetvetch *(Hedysarum boreale)*	1
Lewis flax *(Linum lewisii)*	1
Small burnett *(Sanguisorba minor)*	1
Gooseberry leaf globemallow *(Sphaeralcea grossulariifolia)*	1 *
Fourwing saltbush *(Atriplex canescens)*	2
Shadscale *(Atriplex confertifolia)*	2
Winterfat *(Eurotia lanata)*	1
Black sagebrush *(Artemisia arbuscula nova)*	0.5
Rubber rabbitbrush *(Chrysothamnus nauseosus)*	0.5
Nevada ephedra *(Ephedra nevadensis)*	1
Antelope bitterbrush *(Purshia tridestata)*	2

* Indicates that the species is part of the base seed mix. Remaining species can be included based on cost and availability to reach a minimum seeding rate of 10 lbs PLS.

Re-established plant communities would be protected from livestock use for at least 4 years to assure that plant establishment and growth have progressed to the point that livestock use can be supported without adverse affects on the plant and soil system. The response to animal use will be assessed through the proposed monitoring program that will measure plant cover, production, and woody plant density for at least 5 years after revegetation is completed.

4. Implementing Landscape Considerations.

Newmont is committed to providing a reclamation landscape that is congruous with the surrounding land to the extent technically and economically feasible. Each respective mine facility unit will be evaluated as a component of the overall reclamation program; however, each unit will be able to be reclaimed independently from others as the mine plan allows.

Waste rock piles located in naturally steeper terrain may be regraded at a steeper slope than waste rock piles located on flatter terrain. Constructability, erosion, and sedimentation control considerations will limit the maximum steepness of slopes, which has been determined to be an overall slope of approximately 2.5H:1V. At sites where more gentle slopes would be more compatible with the surrounding landscape, the reclamation topography will consist of overall rounding of piles with more gentle slopes, with the objective of blending the disturbed areas with the surrounding topography.

Final reclamation slopes will be developed to provide smooth transitions into the natural landscape, blending the contours of the piles to meet ridge lines, natural hillsides, and providing smooth transitions into valley bottoms. The creation of undulating surfaces on the tops of the waste rock disposal areas, decommissioned heap leach pads, and tailing storage facilities will be included in the evaluation. Newmont has committed to employ a landscape architect to assist in the development of the final reclamation configuration. For piles in close proximity to each other, regrading will be performed without compromising the reduced erosion and sedimentation objectives, to blend the piles together and remove irregularities, creating a more aesthetically pleasing reclamation configuration.

5. Open Pit Habitat Enhancement for Raptors and Additional Reclamation.

Small overhangs or alcoves will be constructed within the pit walls to provide raptor habitat. These will be constructed in selected areas where safety and feasibility

dictate. To facilitate diversity in the raptor habitat development, sandy material will be placed on selected final pit benches as accessibility and safety dictates.

Topsoil or other select fill material and selected stabilization material, such as coarse rock, will be placed on other accessible areas within the pit to provide additional diversity in habitat.

Newmont will evaluate the reclamation of accessible areas within the open pits. Theses areas would include the haul roads and open benches. These areas would be scarified and covered with topsoil. The thickness of the topsoil as well as the seed mixture would be determined based on the test plot program.

These additional reclamation efforts have been developed to exceed normal reclamation practices, with the goal of achieving the objectives of multiple land use. The topsoil management plan, the intensified test plot program, the establishment of shrub islands or woody land areas, the establishment of a diversified ecosystem, creation of nutritious browse in deer migration paths, the landscape and geomorphic considerations for final land configurations, and the raptor habitat enhancement will each result in the return of the disturbed area to a state better than that which existed prior to mining.

VII. RECREATION

A. SUMMARY OF POTENTIAL IMPACTS

The proposed Plan of Operations will result in continued stress on existing recreational facilities in the Elko area.

B. MITIGATION MEASURES.

As already noted, Newmont will grant to BLM a conservation easement allowing public access to TS Ranch land along Maggie Creek for purposes of research, limited public interpretive areas, and low-impact recreational activities, such as hiking and fishing. Two corridors from State Highway 766 will be defined for access to the areas. Such public access will be allowed after the Riparian Exclusion and Riparian Restoration Zones have had several years to recover (as determined by BLM), and continue so long as Newmont's mine dewatering continues to affect Maggie Creek. Public use of the easement area will be limited to daylight hours. Motor vehicles, bicycles, and campfires will be prohibited. Horses, dogs, and hunting will be allowed on a TS Ranch-issued permit basis.

APPENDIX A

MAGGIE CREEK WATERSHED RESTORATION PROJECT MONITORING PROCEDURES

NEWMONT GOLD COMPANY
NOVEMBER 1993

APPENDIX A

The Maggie Creek Watershed Restoration Project calls for the exclusion of livestock from the rangeland including and surrounding much of Maggie Creek and its tributaries. Some of the designated exclusion areas will remain ungrazed for the duration of the project and subsequent aquifer-recovery period. In other areas, grazing will be permitted after the riparian conditions meet biological standards, and for so long as those standards are maintained.

Management of grazing and maintenance of the standards specified below are in accordance with the US Fish and Wildlife Service draft recovery plan for Lahontan cutthroat trout (LCT) and with the BLM's directive to achieve proper functioning condition on important stream systems.

MONITORING PROCEDURES

Check List

A BLM Check List (in the form attached hereto) for determining the functional condition of riparian/stream systems will be prepared for each of the following stream reaches (see Fig. I-1 for locations):

1. Coyote and Simons Pastures
2. Little Jack Creek Canyon
3. Coyote Creek Canyon
4. middle Little Jack Creek (area of coarse alluvium on the flood plain below the canyon mouth)
5. Jacks Pastures
6. lower Coyote Creek (area of coarse alluvium on the flood plain below the canyon mouth)
7. Cow Camp Pasture
8. Lower Simon Creek Parcel; and
9. the upper reach of lower Maggie Creek (below the Narrows)

These Check Lists will be prepared in 1994, again before livestock are reintroduced to controlled grazing areas, and at five-year intervals after that time.

These summary assessments of stream and riparian condition and function will be used to confirm that the systems are functioning properly before livestock are reintroduced, and that proper function is maintained as grazing occurs.

Detailed Riparian and Stream Monitoring

The riparian monitoring program will encompass some parameters that will be used as evaluation criteria, and others that are informational only. This distinction is made because some important stream characteristics are already functioning properly (as evidenced by the presence of a reproducing population of LCT), and because the nature and degree of change in some parameters cannot be predicted, making it impossible to specify standards to be met.

Monitoring will occur at a number of stream stations averaging one per stream mile, or more at Newmont's option. To the extent feasible and advisable (as determined in consultation with BLM resource specialists), stations that have been monitored in the past will continue to be used, in order to take advantage of comparative data from previous years. Additional stations will be established to ensure that a sufficiently wide variety of stream morphologies and vegetation types are observed. Newmont and the BLM will consult and agree upon the locations of the stations. At a minimum, monitoring will occur in July 1994, again in July of the year before livestock are reintroduced, and continuing thereafter at intervals of no more than five years thereafter. Additional monitoring (up to annual) will occur in the years following livestock reintroduction. Monitoring will be the responsibility of Newmont and will be conducted by a third party contractor mutually acceptable to Newmont and the BLM.

Subject to mutual agreement, evaluation standards may be altered, or the locations of stream monitoring stations may be changed as necessitated by external (non-project) alterations of the stream and riparian systems (such as beavers, floods, road or other construction, etc.).

Evaluation Criteria - Stream Reaches 1, 2, and 3

The evaluation criteria for upper Little Jack Creek, upper Coyote Creek, and middle Maggie Creek are riparian condition class (a combination of bank stability and bank cover), width to depth ratio, and width of the riparian zone. The evaluation criterion for other stream reaches (numbers 4 through 9 in the list above) is wetland plant cover; methods and standards are discussed separately below.

Riparian Condition Class

Bank stability will be monitored as specified in BLM manual 6671, with the additional specification that stones of greater than three inches in diameter will be judged to constitute a stable bank material even in the absence of rooted plants.

Bank cover will be monitored as specified in BLM manual 6671, with three additional specifications. First, sagebrush (*Artemisia tridentata* and *arbuscula*) and rabbitbrush (*Chrysothamnus* spp.) will not be included in the bank cover vegetation that is recorded.

Second, the bank cover percentage will be determined on the basis of the percentage of soil that is covered by plants; large rocks will not be regarded as unvegetated bank length. Third, the difference between scattered and medium cover will be determined on the basis of plant spacing. Where the average distance between plants is greater than the average height of those plants, cover will be considered scattered. Where plants are closer together than their average height the cover will be determined as medium (or higher).

Bank cover and bank stability data will be combined to determine the riparian condition class. The standards to be met are a minimum of 60 percent of optimum (equivalent to a BLM riparian condition class rating of "good" as specified in manual 6740) for Little Jack and Coyote Creeks, and a minimum of 70 percent of optimum (BLM condition class of "excellent") for middle Maggie Creek. This difference in standards recognizes the inherent differences between high gradient streams such as the upper (LCT-supporting) reaches of Little Jack and Coyote Creeks, and the fact that riparian recovery is anticipated to proceed more rapidly and fully along Maggie Creek.

Width:Depth Ratio

The ratio of stream width to depth will be determined as specified in BLM manual 6671: four depth measurements, including one measurement of zero (the water's edge) will be averaged, and the width will be measured at that point. At least five width:depth transects will be measured at each stream monitoring station.

The standards to be met and maintained are either a maximum ratio of 15:1, or a 30 percent reduction from the 1994 baseline monitoring result.

Riparian Zone Width

The riparian zone width will be measured from each streambank outward to the line where riparian vegetation ends. The width will be measured separately for the right and left banks, and these two measurements will be totaled in evaluating achievement of the required standard. Where riparian plant species become gradually but increasingly scattered, the zone will be defined as ending where the average distance between riparian plant species is greater than the average height of those plants.

The standard to be met is an increase of 30 percent over the 1994 baseline monitoring result.

Informational Monitoring - Stream Reaches 1, 2, and 3

Parameters to be monitored to provide more information about the function and recovery of these stream reaches include shore water depth, vegetation overhang, pool characteristics, and water temperature. Photography will also occur as specified below. Results obtained from Informational Monitoring may be used to alter evaluation criteria if mutually agreed by BLM and Newmont.

Shore Water Depth

Shore water depth will be determined as specified in U.S. Forest Service general technical report INT-221.

Vegetation Overhang

The extent of overhanging woody vegetation will be determined as specified in U.S. Forest Service general technical report INT-221; herbaceous vegetation will not be measured.

Pool Characteristics

The number and quality of pools that are greater than one foot in depth (or a shallower minimum depth as mutually agreed) will be determined for a 200 foot reach centered on each monitoring station. Pool quality rating will be determined according to Table D-1 of BLM manual 6720-1. The pool-riffle ratio will be determined for each station.

Temperature

(Self-explanatory)

Photography

Each monitoring station will be photographed looking upstream, downstream, and across the stream. Color aerial photographs (false-color infrared or natural color, as mutually agreed) will be taken at or enlarged to a scale of 1:6,000 of all monitored riparian areas. At a minimum, aerial photography will occur in July 1994, again in July of the year before livestock are reintroduced, and continuing thereafter at intervals of no more than five years thereafter. Additional photography will occur up to annually in the years following livestock reintroduction.

Wetland Plant Cover - Stream Reaches 4 Through 9

The evaluation criteria specified above for middle Maggie Creek, upper Little Jack Creek, and upper Coyote Creek are based upon BLM and Forest Service stream monitoring procedures that are only fully applicable to perennial streams with a single defined channel. Portions of the other stream reaches to be monitored do not fit this description. Accordingly, it was determined that the most valuable parameter to be monitored is wetland plant cover.

Procedure

Monitoring will occur on the schedule previously specified. At least five quadrats will be monitored along a transect located at each monitoring station. Quadrats size will accurately reflect the character of the local vegetation. Depending upon the nature of the stream and wetland complex at the location of each station, the transect will be along or perpendicular to the stream. From year to year, the quadrat size and transect orientation will be consistent at each station.

The percent absolute hydrophytic plant cover at each quadrat will be recorded. Hydrophytic plants are those defined as facultative (FAC) or "wetter" by the U.S. Fish and Wildlife Service. For herbaceous species, cover will be interpreted to mean basal cover; for woody species, cover will be interpreted to mean canopy cover.

To determine achievement and compliance with evaluation standards, data will be averaged over the entire stream reach to be subject to a given grazing treatment (e.g., the stream reaches in the numbered list above).

The standards are as follows:

Little Jack Creek and Coyote Creek flood plains: If at least a 10 percent increase in hydrophytic cover occurs, then these pastures will be grazed in the same manner as the upper Little Jack Creek/Coyote Creek riparian pasture. If less than a 10 percent increase occurs, then the middle pastures will be grazed in the same manner as the adjacent low-slope pastures (e.g., Chicken Springs pasture).

Jacks Pastures, Cow Camp Pasture, Lower Simon Creek Parcel, and the upper reach of lower Maggie Creek (above the discharge point): If there is at least a 10 percent increase in hydrophytic cover, then these pastures may be grazed, starting in 1997, in such a manner as to maintain this new level of hydrophytic cover.

Utilization Monitoring Common to Pastures Where Grazing Is Permitted

During years when any of the pastures are grazed, Newmont will monitor utilization levels. Utilization will be recorded as the percentage use of the current year's growth of perennial streamside vegetation and on woody riparian vegetation as applicable. Timing, number and location of utilization studies will be mutually agreed upon by Newmont and the BLM.

Reporting Procedures

Newmont will submit all stream and riparian monitoring reports (except utilization monitoring) to the BLM within one month of the date that field inventories are completed. For utilization monitoring, results will be provided to the BLM within one week of the date that field inventories are completed.

Check List

Name of Riparian-Wetland Area: _____

Date: _____ Segment/Ranch ID: _____

Miles: _____ Acres: _____

ID Team Observers: _____

Yes	No	N/A	HYDROLOGIC
			Floodplain inundated in "relatively frequent events (1-3 years)"
			Activate/stable beaver dams
			Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e. landform, geology, and bioclimatic region.
			Riparian zone is widening
			Upland watershed not contributing to riparian degradation

Yes	No	N/A	VEGETATIVE
			Diverse age structure of vegetation
			Diverse composition of vegetation
			Species present indicate maintenance of riparian soil moisture characteristics
			Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events
			Riparian plants exhibit high vigor
			Adequate vegetative cover present to protect banks and dissipate energy during high flows
			Plant communities in the riparian area are an adequate source of coarse and/or large woody debris

Yes	No	N/A	EROSION DEPOSITION
			Floodplain and channel characteristics (i.e. rocks, coarse and/or large woody debris) adequate to dissipate energy
			Point bars are revegetating
			Lateral stream movement is associated with natural sinuosity
			System is vertically stable
			Stream is in balance with the water and sediment being supplied by the watershed (i.e. no excessive erosion or deposition)

Remarks

Summary Determination

Functional Rating:

Proper Functioning Condition _____
Functional - At Risk _____
Non Functional _____
Unknown _____

Trend for Functional - At Risk:

Upward _____
Downward _____
Not Apparent _____

Are factors contributing to unacceptable conditions outside BLM's control or management?

Yes _____
No _____

If yes, what are those factors?

_____ Flow Regulation _____ Mining activities _____ Upstream channel conditions
_____ Channelization _____ Road encroachment _____ Oil Field water discharge
_____ Augmented flows _____ Other (Specify) _____

APPENDIX B

MAGGIE CREEK
STREAMFLOW AUGMENTATION PLAN

NEWMONT GOLD COMPANY
NOVEMBER 1993

INTRODUCTION

As part of the SOAP Mitigation Plan, Newmont Gold Company proposes to mitigate the potential dewatering of Maggie Creek for the approximate 8.4 stream miles above the Maggie Creek Canyon Narrows. This portion of the creek is within the dewatering cone of depression 10 foot isopleth defined in the SOAP DEIS (Figure 1). The purpose of this plan is to outline the initiation, execution, riverine-riparian benefits and closure procedures for mitigation by stream flow augmentation.

Hydrologic impacts as a result of planned dewatering of the Gold Quarry pit have been assessed through hydrogeologic numeric modeling conducted by Hydrologic Consultants, Inc. Newmont proposes to mitigate these potential impacts by fencing and the exclusion of cattle grazing along this sensitive reach of Maggie Creek. Implementation of these actions would enhance vegetation and natural channel configuration and are anticipated to offset impacts that might occur from diminished instream flows resulting from pit dewatering. Contingent to this mitigation, Newmont proposes to restore instream flows to this section of Maggie Creek as triggered by declines in water levels in observation wells MG-4 and NMC-2 (Figure 1) and by loss of creek surface flows.

STREAMFLOW AUGMENTATION PLAN

The historic Maggie Creek base flow discharge of 2.5 cfs in middle Maggie Creek is predicted to be impacted by Gold Quarry pit dewatering by the end of the year 2001. The timing and extent of this impact will be monitored by the network of ground water observation wells and surface water flow measurement sites in the Maggie Creek Basin Monitoring Plan. Two piezometers completed in Tertiary basin-fill sediments, NMC-2 and MG-4 as shown in Figure 1, will be used to trigger the stream flow augmentation plan. Triggers for increased monitoring and stream flow augmentation are specified in the SOAP Mitigation Plan. This potential acceleration of drawdown rates, beyond naturally occurring fluctuations in the water table, will be documented with enough lead time, on the order of four to six months, to allow construction of the water distribution system to be completed before any impact can occur.

The implementation of the Maggie Creek instream flow augmentation plan would require the following:

1. NPDES permit from the Nevada Division of Environmental Protection for multiple discharge points within the Maggie Creek augmentation area, including the application of water to subsidiary channels and tributaries; water quality standards

defined by state and federal regulatory agencies will be met, if necessary, through existing water treatment and cooling facilities;

2. Change of Place and Manner of Use permit from the Nevada Division of Water Resources to allow Gold Quarry pit area wells to be applied to the reach of Maggie Creek above the Narrows; existing underground water rights held by Newmont Gold Co. will be used for this environmental mitigation project, with water being transferred from existing potable water supply and/or dewatering wells located in and around the Gold Quarry mine;

3. Detailed design engineering for the water distribution system including energy dissipation structures in the channel and water treatment and/or cooling tower hook-ups at the supply source, if necessary, will be made available for regulatory review in 1994;

4. Installation of monitoring stations and observation wells along the channel and in the saturated floodplain area to document the performance and effectiveness of the augmentation.

Based on seepage run data from the USGS and from NGC, and from the results of numerical modeling, it is anticipated that a maximum of 3.5 cfs discharged at the upper portion of this reach of Maggie Creek (coincident with the ten foot isopleth) will maintain a 2.5 cfs flow, corresponding to base flow, where the creek enters the Narrows (MAG-5 in Figure 1). This volume of flow augmentation will be used to maintain the Maggie Creek channel and riparian vegetation during all times of the year except during spring runoff events.

Water from existing wells and treatment facilities in and around the Gold Quarry mine, which will be treated so as to maintain applicable Class B stream standards, will be pumped up to the channel augmentation distribution system, shown in Figure 2, through a sixteen inch HDPE pipeline capable of transmitting 5 cfs, counting for friction loss. This pipeline, approximately seven miles in length, will follow the paved road through the canyon and cross SR 766 above the Narrows to the area along Maggie Creek corresponding to the location of the modeled ten foot isopleth. The upstream distribution point will consist of buried HDPE emitters that will transmit 3.5 cfs directly to the low flow channel, without impacting unstable vertical banks. Approximately every mile downstream from this distribution point, subsidiary emitters will supply up to 0.5 cfs if seepage is greater than anticipated to ensure a 2.5 cfs minimum flow at MAG-5. This water distribution system is shown in Figure 2 with the principal and subsidiary pipelines. A branch off this pipeline will be capable of carrying up to 100 gpm of water to the saturated meadows area along the lower portion of Simon Creek. Locations of additional shallow ground water monitoring wells and surface flow measurement sites along Maggie Creek are also shown on Figure 2.

An expansion of this flow augmentation system may be necessary to distribute water to Maggie Creek at the confluence with Coyote Creek, north of the predicted area of dewatering impacts defined by the ten foot isopleth (Figure 3). To determine the need for such expanded augmentation, Newmont will install, within one year of the issuance of the Record of Decision, monitoring wells MAG-A, MAG-B, MAG-C and MAG-D as depicted in Figure 3.[4/] Well MAG-A will be used to trigger study of the California floater population in middle Maggie Creek, as provided in Section IV of the Mitigation Plan. Well MAG-B will be used to trigger expanded augmentation in Maggie Creek pursuant to the criteria and procedures described for wells NMC-2 and MG-4 in Section II.C.3(a) of this Mitigation Plan. An additional six miles of pipeline will continue to follow the road and distribute water to Maggie Creek at the three distribution points shown in Figure 3. Again, buried emitters with low discharge velocities will be used in applying water to the creek. Well MAG-C, together with well JCK-3, may be used to trigger additional study or consultation regarding LCT (as provided in Section IV of the Mitigation Plan). Well MAG-D will be installed to provide additional groundwater monitoring data in upper Maggie Creek at the boundary of the DEIS study area.

Cessation of Maggie Creek flow augmentation will be triggered by the return of water levels to one foot above the adjacent creek bed elevation in the trigger monitoring wells or by the return of naturally occurring 2.5 cfs base flow in the channel after the runoff period, taken as the average October flow. Detailed monitoring of the augmentation system will be required to determine when, after any individual runoff period, flow augmentation will be terminated. The hydrogeologic numeric model completed for the DEIS indicates that Maggie Creek base flow will return to within ninety percent of its historic 2.5 cfs average in the decade beginning with the year 2030. Analysis of the water table and surface flow data will be performed in conjunction with regulatory personnel to determine if the system can be closed. Upon closure, all ground water monitoring wells that will no longer be of service will be abandoned in accordance with State regulations, the pipeline distribution system will be removed, and all surface disturbance will be reclaimed in accordance with the high standards set by Newmont in its other reclamation projects.

LOCAL SETTING AND HYDROGEOLOGY

The Maggie Creek basin is the hydrographic region lying between the Tuscarora and Independence Mountains, covering an area of approximately 400 square miles, and is drained by Maggie Creek to the Humboldt River. Maggie Creek bed elevations range from 4,895 to 5,090 feet at the mouth of the Narrows and from 5125 feet at the upper end of the Narrows to 6845 feet at the extreme upper end of the basin. The climate is semiarid with an average annual precipitation rate of 14 inches recorded at the Carlin Mine during the period 1966-1990.

4/ Well MAG-C will be installed at Newmont's discretion.

Approximately 60 percent of the annual average precipitation occurs as snow, with orographic controls on precipitation and recharge providing most ground water recharge to the surrounding mountains. Sagebrush, rabbitbrush and grasses are the principal vegetative types in the area of interest.

Hydrostratigraphic units within the basin consist of Paleozoic cherts, siltstones, limestones, and dolomites, Tertiary volcanic rocks and Tertiary lacustrine and alluvial sediments consisting of gravel, sand, silt and clay size materials. Primary porosity has been enhanced by folding and Basin-and-Range block faulting, resulting in localized secondary fracture permeability in bedrock units. Most of the basin-fill materials are fine grained and are characterized by horizontal conductivities in the 0.2 to 1.0 ft/day range, vertical conductivities of 0.02 to 1.0 ft/day range, specific yields of 0.01 and specific storage values of 0.000001. Erosion as a result of block faulting and greater precipitation during the Quaternary removed considerable volumes of Tertiary basin-fill materials and deeply dissected adjacent piedmont slopes. Quaternary alluvium is generally thin and localized in extent with hydraulic conductivities between 0.5 and 5.0 ft/day, a specific yield of 0.05 ft/day and a specific storage value of 0.000005.

Soil types in the Simon Creek confluence area of Maggie Creek have been mapped by the USDA as:

Cherry Spring (Cf)	silt loam/gravelly loam
Cluro (Co)	silt loam
Four Star (Fm)	loam, locally drained
Ocald (Od)	silt loam, locally drained
Bicondo (Bf)	silty clay loam
Alluvial land (Au)	gravel to silty clay loam
Ocald (Ok)	silty day loam, slightly saline
Welch (Wc)	loam

Ground water flow in the Simon Creek area is from the mountain areas to the drainage axis of the Maggie Creek basin via subsurface flow, spring discharges and the intersection of the top of the water table by the creek bed. Mountain block springs discharge from structurally compartmentalized bedrock to major tributaries of Maggie Creek such as Simon, Little Jack and Coyote Creeks. Runoff of snowmelt can provide large flows to these tributaries during winter and spring melting episodes of generally short duration. After runoff, these tributaries exhibit both gaining and losing reaches prior to joining Maggie Creek with the losing reaches providing subsurface flow to downgradient areas of saturated floodplain created by depression springs that occur along these tributaries and along Maggie Creek, as shown in Figure 1. These perennially saturated areas, as well as late summer and fall instream flows (low and base flows) in Maggie

Creek may be impacted by Gold Quarry pit dewatering, as indicated by the results of numerical hydrogeologic modeling.

The Maggie Creek channel in the area of interest is characterized as a C4 type (Rosgen classification) with high width-to-depth ratios, low entrenchment ratios and with moderate sinuosity. The riffle-to-pool ratio has been observed to be less than 1:1 and the channel bed is primarily composed of fine grained sediment without significant pebble and cobble armoring. The channel divides into several smaller channels just below its confluence with Simon Creek. Temperature, pH and dissolved oxygen values for this reach of Maggie Creek, measured at the USGS gaging station at the mouth of the Narrows (MAG-3), are compared to cutthroat trout habitat criteria developed by the BLM and USFS:

Criteria	Index	MAG-3 Ranges	MAG-3 Average
Temperature	< 22C	17-22.5C	19.6C
pH	6.5-8.5	8.22-9.33	8.59
Dissolved Oxygen	>8 mg/L	3.2-10.4	6.9

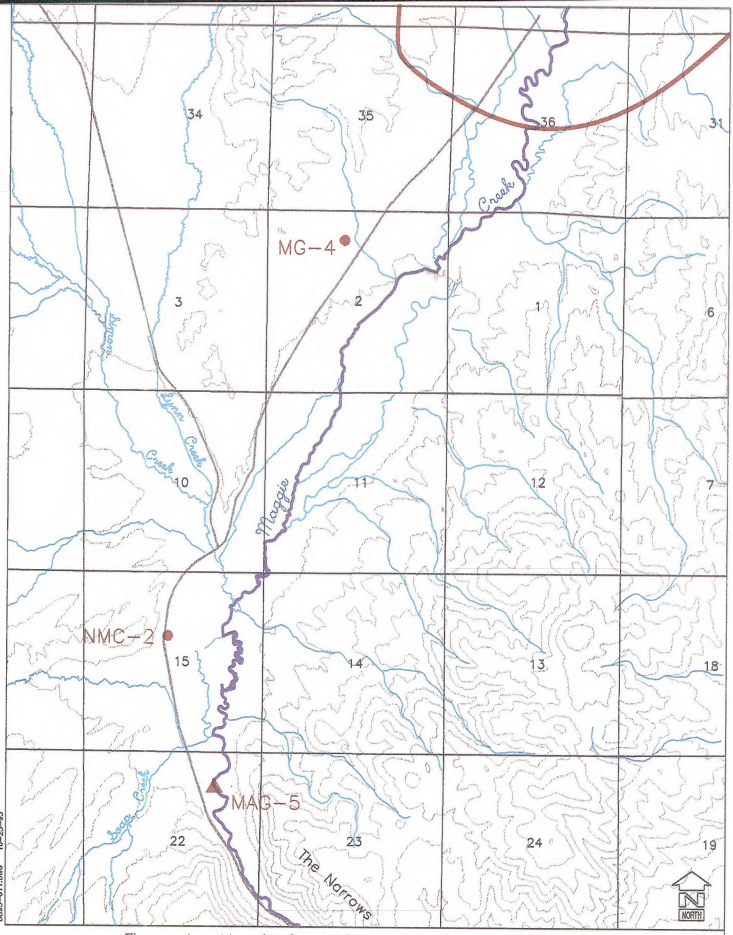


Figure 1. Maggie Creek Streamflow Augmentation Area

10 Foot Isopleth
Ephemeral Tributaries
Perennial Reaches of Maggie Creek
Location of Trigger Monitoring Wells
Location of Trigger Streamflow Measurement Site

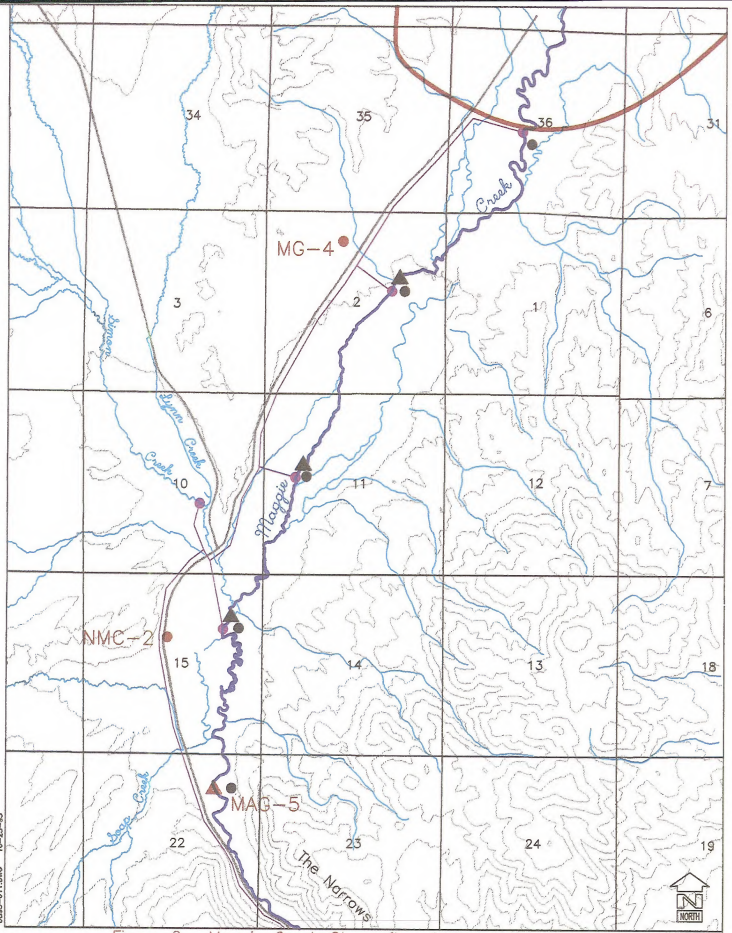


Figure 2. Maggie Creek Streamflow Augmentation System

- Pipeline
- 10 Foot Isopleth
- Ephemeral Tributaries
- Perennial Reaches of Maggie Creek
- Distribution Points
- Location of Monitoring Wells
- Location of Trigger Monitoring Wells
- Location of Trigger Streamflow Measurement Sites
- Location of Streamflow Measurement Sites

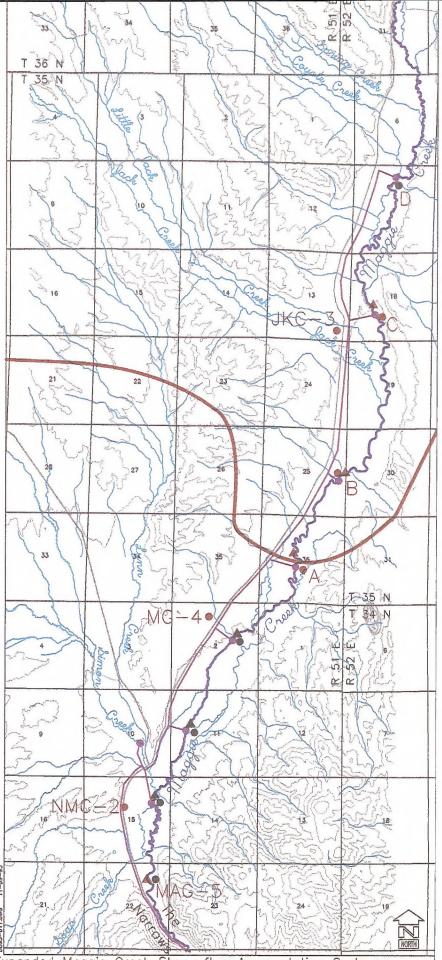


Figure 3. Expanded Maggie Creek Streamflow Augmentation System

- Pipeline
- 10 Foot Isopleth
- Ephemeral Tributories
- Perennial Reaches of Maggie Creek
- Distribution Points
- Locotion of Monitoring Wells
- Locotion of Trigger Monitoring Wells
- Locotion of Trigger Streamflow Meosurement Sites
- Locotion of Streamflow Meosurement Sites

APPENDIX C

SUSIE CREEK
STREAMFLOW AUGMENTATION PLAN

NEWMONT GOLD COMPANY
NOVEMBER 1993

The historic Susie Creek base flow discharge of 0.8 cfs was measured by a now decommissioned U.S. Geological Survey gaging station just below the confluence with middle Susie Creek. The base flow is predicted to be impacted by Gold Quarry pit dewatering in the year 2001 by detailed hydrogeologic numeric modeling. Maximum impact is modeled to occur in the year 2005, when 0.5 cfs may be lost due to lowering of the water table. Recovery of the water table to ninety percent of its original level in this area of Susie Creek is modeled to occur by the year 2060. The actual timing and extent of this modeled impact will be monitored by the network of ground water observation wells and surface flow measurement sites in the Maggie Creek Basin Monitoring Plan.

Two piezometers shown in Figure 1 will be used to trigger increased water level and streamflow monitoring. These two piezometers, SC-1 and SC-2, are completed in basin fill volcanic and sedimentary rocks, respectively. Two surface flow measurement sites, SCS-1 and SCS-3 shown in Figure 1, will also determine the need for augmentation. Triggers for increased monitoring and streamflow augmentation are specified in the South Operations Area Mitigation Plan. Augmentation of streamflow in Susie Creek will consist of the maintenance of at least 0.8 cfs at the SCS-1 streamflow measurement site above the confluence with middle Susie Creek and the maintenance of at least 0.5 cfs at the SCS-3 streamfow measurement site. Augmentation will be provided by the drilling of one or more wells in the area of SCS-1 and pumping water to low velocity transmitters in the creek bed via a buried pipeline. The potential acceleration of water table drawdown in this area of Susie Creek will be documented with enough lead time, on the order of four to six months, to allow the construction of the streamflow augmentation system to be completed before any impact can occur.

The implementation of the Susie Creek streamflow augmentation plan would require the following:

1. NPDES permit from the Nevada Division of Environmental Protection for discharge at the SCS-1 site; all water quality standards defined by state and federal regulatory agencies will be achieved;

2. Underground water rights permits from the Nevada Division of Water Resources for instream flow replacement;

3. Design of the water supply wells, power source and low velocity transmitter to supply water to the SCS-1 augmentation site. Solar powered pumps or a diesel generator will be used to power the wells.

Cessation of Susie Creek flow augmentation will be triggered by the return of water levels to one foot above the adjacent creek bed elevation in the trigger monitoring wells or by the return of the naturally occurring 0.8 and 0.5 cfs base flows at SCS-1 and SCS-3, respectively. Analysis of the water table recovery and streamflow discharge data will be performed in conjunction with regulatory personnel to determine if the system can be closed. Upon closure, all water supply and observation wells will be abandoned in accordance with State regulations.

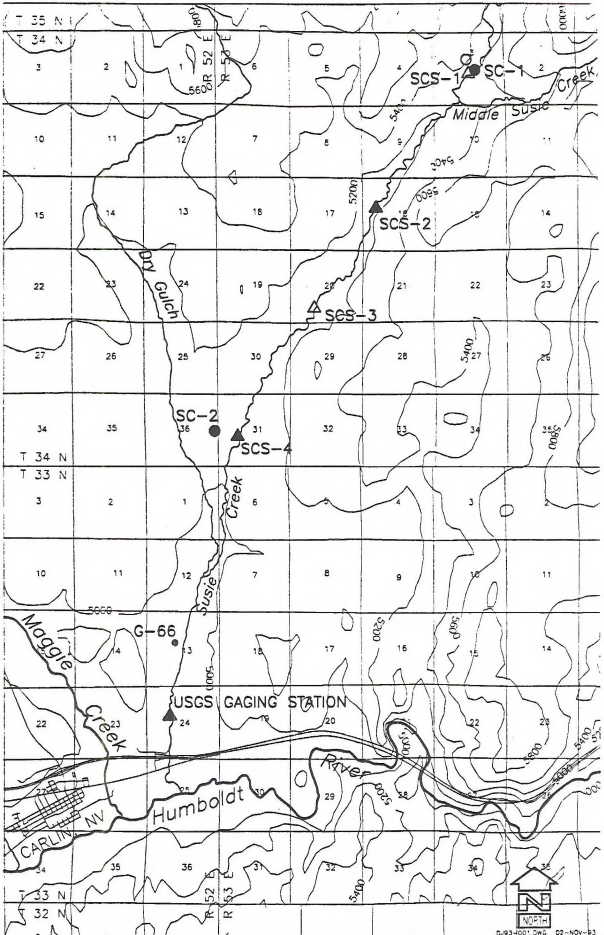


Figure 1. Susie Creek Streamflow Augmentation System

▲ SURFACE MONITORING LOCATION
△ TRIGGER SURFACE MONITORING LOCATION
● TRIGGER MONITORING WELLS
○ AUGMENTATION SUPPLY WELLS
• MONITORING WELLS